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L.C.

FIVE HUNDRED



Questions and Answers

—ON—

POULTRY RAISING.

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J. Wallace Darrow
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FIVE HUNDRED
QUESTIONS
AND
ANSWERS!

ON
Poultry Raising.

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A BOOK OF PRACTICAL AND AUTHENTIC INFORMATION IN THE FORM OF
QUESTIONS AND ANSWERS ON VARIOUS SUBJECTS, AS FEED AND
CARE, DISEASES, EGGS, INCUBATORS, BUILDINGS, ETC.

With a Chapter on Turkeys, Geese & Ducks.

CHATHAM, N. Y.
The Fanciers' Review.
1891.



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INTRODUCTION.

In presenting this book to the poultry fanciers of America, we make no claim for originality. We have collected the questions and answers from various sources believed to be authoritative, and while many of the questions with the answers have been re-written and condensed, in the main they are as we find them in the columns of the poultry press and poultry books. We are especially indebted to the following named journals: "The Poultry Keeper," edited by Mr. P. H. Jacobs; the "Farm Poultry," edited by Mr. P. H. Hunter; the "Poultry Monthly," edited by Mr. B. Holmes, Jr.; the "Poultry World," edited by Mr. H. H. Stoddard; the "Fanciers' Journal," edited by Mr. J. H. Drevestadt; the "Fanciers' Monthly," edited by Mr. C. H. Harker and the "Fanciers' Review." Also to Felch's "Poultry Culture" and Stoddard's "Poultry Diseases." They are all recognized authorities on poultry matters and we gladly accredit them with whatever of good, practical "poultry sense" there may be in the book.

Nor have we attempted to ask *all* the questions that might be asked by those who are launching out in the poultry business. We do not claim to have exhausted an exhaustless subject. It would require more pages than are found herewith to ask and answer in completeness all the questions that might arise in this connection. However, we have selected about five hundred of them and we present them to the fraternity of amateur poultrymen, particularly, in the hope that they may find in them much of practical worth.

THE PUBLISHER.



CHAPTER I.

FEEDING AND CARE.

1. Carbonaceous Foods.--Please give a list of the foods which are carbonaceous and of those which are nitrogenous. Which of the above are for bone and feathers and which are for fat and muscle?

Carbonaceous foods are the grains, with fat of any kind, as well as potatoes and other starchy foods. Nitrogenous foods are milk, meat, beans, clover, and the grasses. The nitrogenous form bone, feathers, and muscle. The carbonaceous form fat. All foods, however, are to a certain extent, both carbonaceous and nitrogenous.

2. Green Oats and Rye.--Is green oats as good as clover hay for hens, and what time ought it to be cut? Is rye good also. I believe if it was cut when green and well cured, it would make a good feed in winter for hens.

When young grass, rye, or oats are cut before making much growth it is watery and contains but little nutrition, too much of such food causes the hens to have scours. Many persons have been disappointed in confining their fowls on young rye as an exclusive food. It is excellent as a dietary food, but all very young grass is mostly water. We do not advise cutting such for winter use, but if oats are grown and the crop cut when the grain is in the milky stage, the nutritive matter, on its way to fill out the grain, will be arrested in the stalk, so that, when cured, the whole stalk (with the grain) if cured, stored in the barn, and cut fine with a cutter, will make excellent food for the hens. The oats should be cut green, just as the seed heads begin to form.

3. Sugar-Cane Seed, Etc.--What properties are claimed in sugar-cane seed, and with what grain does it compare best--wheat or corn? Will sweet skimmed milk answer the place of fresh meat for young chicks? How much milk should I give to 100 chicks per day?

It approaches more to wheat than to corn. We have no formula of its ingredients at present, but it is more nitrogenous than corn. The skimmed milk will not take the place of meat, but is excellent. Give any amount they will drink of the milk.

4. Curing and Feeding Clover.--When should clover be cut, and do you make it in hay or pack it away in boxes while green? Do you steam it before feeding?

Clover should be cut when the blossoms begin to turn brown. It is then at its best with the seed-making material stored up in the stalk. It can be siloed in boxes or barrels, but probably the most convenient way of keeping it is to make it into hay, and when wanted to feed run it through a hay-cutter or clover-cutter, cutting it into about half-inch lengths, and steam in a closed vessel. Siloed clover is no doubt better if it is perfectly siloed, but we would advise any one inexperienced in siloing to experiment with a small quantity first, making hay his chief reliance. Some poultrymen fill a huge kettle with clover, pour on a couple of buckets of hot water, and having a slow fire under it to keep up the steaming and bring to a boil, then stirring in meal and shorts to make a mash. Excellent results are also obtained by simply cutting up the clover into a

firkin or tub, pouring boiling hot water onto it, letting it steam (covered closely) all night. This, fed clear, is very like the grass biddy gets when running at large, and is an excellent green food.

5. Feeding Glass.—How about feeding glass to poultry?

The same answer as the advice Punch gave to people about to marry,—“Don’t!” Glass has terribly keen edges sometimes, and a chicken’s gizzard may be cut by it so that he dies. Broken crockery is far preferable, and contains elements which the fowls love. Feed broken crockery or pounded bricks, but not glass.

6. Buttermilk.—Is the buttermilk beneficial or injurious to poultry? Also sweet milk? If not injurious will all they want hurt them?

It is excellent. Give them all they wish of fresh milk, sour milk, buttermilk, or in any form.

7. Pork Scraps.—Are cracklings or pork scraps good for fowls?

They contain usually about 30 per cent. of fat, and we do not recommend them.

8. Sorghum Seed.—Is sorghum seed good for poultry? If so how much should be fed?

It is excellent. Feed the same quantity as of corn.

9. Corn Fodder.—Is cured corn fodder, cut half inch long, as good for chickens as clover hay?

If scalded, yes, to a certain extent, but not wholly, as clover contains more nitrogen.

10. Carrots, Coal Ashes, Etc.—Are carrots good as hay feed for hens, either boiled, mashed and mixed with wheat middlings, or should they be chopped fine and fed raw? Is it a good plan to keep a supply of coal ashes before hens so they can pick them, eat all they desire, and wallow in them?

Carrots are a good vegetable food either cooked or raw. There is no need to chop them fine to feed raw. Split them in halves and the fowls will eat the meat all out of them. Use coal ashes, only don’t throw them down coarse clinkers and all. The fowls will eat a great deal of the coarse stuff and dust in the ashes.

11. Beans for Fowls.—Are Red Kidney beans cooked and mixed with ground feed good for hens that lay?

They are a good food but somewhat fattening. Should feed them moderately. Are they not an expensive food? Cannot you sell the beans at a good price and buy a better food, as wheat, in the place of it?

12. Meat Scraps.—Are the meat scraps where tallow is pressed out good for chickens? or is that good where lard is pressed out by the butchers?

As the grease is usually very thoroughly extracted the scraps may not contain much fat. They can be used if not fed in excess. We do not recommend them.

13. Beef Blood.—Is beef blood good for chickens, and how is it best prepared?

Beef blood is excellent, being rich in nitrogen, and nearly approaches the white of the eggs in composition. It may be thickened with a mixture of meal and bran, put in a bag and boiled, or it may be mixed, if fresh, with the regular soft food. Feed it only twice or three times a week, as it will cause bowel disease if too much is given.

14. How Often to Feed.—Would you advise the feeding of fowls three times a day, when they are enclosed in yards, during the winter months, when the days are so short?

Yes. We advise feeding three times a day all the year. The fowls are less likely to get starving hungry and then overeat if they have three meals a day. Another advantage is that all are likely to get a share, as none will be so selfish as to drive a weak sister away (she may crowd her one side, but won’t persistently fight her off) where there is not a long interval between meals. Another (and great) advantage is that it favors feeding a variety.

15. Sun Flower Seeds.—Are sun flower seeds good feed for poultry?

Yes. Feed a pint, three times a week, to 12 hens, and they will be found excellent. Would not advise feeding them in warm weather. They are very rich in fats.

16. Vegetables for Winter.—I wish to devote a portion of my garden to raising some vegetables to feed to my poultry next winter. What would you advise?

Cabbage and turnips; getting a good winter variety of the former, drumheads or sure heads; and the purple top strap leaf turnips. These can be sown as late as July, where early peas and early potatoes have come out. Clover hay cut fine and steamed, is far superior to cabbage, turnips, etc. It seems to be exactly the thing wanted; the cabbage, etc., being a makeshift.

17. Flaxseed Meal.—Would you advise feeding flaxseed meal to fowls which are laying? I fed some oil meal to them, and soon after they quit laying.

We feed a little flaxseed meal, and only a little,—say a pint mixed into a barrel of meal. Probably it was fed too liberally, which caused the checking of laying, although the check may have been due to another cause.

18. Broom Corn Seed.—Tell us whether broom corn seed is good for poultry or not. If good, how often should it be given?

It is excellent. Feed every other day.

19. Feeding Ten Hens.—I have ten hens, Laced Wyandottes. I can feed them but three times a day,—morning, noon and night. What in your judgment should I feed them, and how much in quantity to that number?

You will probably find the plan of mash in the morning, barley at noon, and wheat at night, the best. The mash of cooked vegetables, a pinch of salt, corn meal, fine feed and shorts, with a handful of ground beef scrap for animal food, gives a very perfect ration and a variety.

20. Food for Chicks.—What kind of food is best for young chicks when their feathers begin to grow rapidly?

Give a little chopped lean meat, cooked, three times a week, with rolled oats before them all the time. A small box of ground bone should be within access to them also.

21. Feeding Clover Hay.—Please tell me how to feed clover hay?

Clover hay should be cut fine (about half-inch lengths) and steamed some hours

by pouring boiling water upon it and covering over tight. This restores it to its fresh condition, much as it was before drying. It can be fed clear, for a midday feed, or mixed with shorts and meal in a mash. Some breeders cook the clover in a kettle and mix in a mash as though it were vegetables. Any way that gets the clover to the biddies is good.

22. Bone Meal.—Please tell me how to feed bone meal to the chickens; what proportion to feed to pullets and old hens.

About five per cent., or a handful of bone meal to about five quarts of combined meal, shorts, etc. We believe it much better to feed a little regularly, than to feed a larger quantity at one time, and then none for a time, for the reason that the fowl's system can only assimilate (take up) a small amount, and the excess would be lost. It is true of many kinds of food, and for more kinds of animals than fowls.

23. Rye.—Is rye good to feed to poultry, and how does it compare with wheat?

It is fully as nitrogenous as wheat, but not so fattening.

24. Young Calves' Meat.—Will it pay to use the meat of young calves for poultry? If so, how should it be prepared?

It will; prepare by cooking to a broth and thicken with meal and ground oats.

25. Feeding Timothy Grass.—How about the use of Timothy (or Herbsgrass) as a green food for poultry in winter. It seems to be tender and nice, and not affected by frost. Would it be better than the steamed clover hay? Are turnip tops and leaves good to feed to hens?

Yes, it would be one of the best of green foods, and equal to steamed clover hay. Yes, turnip tops are good, but not equal to fresh grass.

26. Gravel.—Why is gravel recommended for fowls?

The gravel serves as teeth in the gizzard and assists in grinding and pulverizing the food.

27. Pop Corn.—I have a quantity of pop corn that I want to feed to fowls. Do you consider it the proper food for laying hens, and in what condition should it be fed to meet with best results?

Pop corn is good, and at all times.

28. Feed for Sitting Hens.—What should a hen be fed to be kept in good condition when sitting nine weeks?

Rather a long time, but corn is the best food in such cases, though the hen should also have other nourishing food.

29. General Feeding.—Tell us in a general way how to feed laying hens.

A hen that lays needs her regular food and fresh drink as much as a man who labors. They require a change. Buckwheat, oats, meal, and (in season) sour milk are all very good. Potatoes boiled and mashed with a little salt sufficient to make palatable, and some gravy mixed, are excellent, and of which they are very fond. When confined they require often animal food, without which they become dormant, sluggish and inactive.

30. Clover Hay, Beets, Etc.—Is clover ensilage good for laying hens in the winter? Is it better than clover hay cut fine and fed? Can it be fed to young chicks without injury, provided it is sweet? Are sugar beets a good winter food for fowls in confinement?

Clover ensilage is excellent for fowls in winter; it being more succulent than cured hay; it makes a better feed. Young chicks will receive no injury from it if fed intelligently. The beets make a very good winter relish.

31. Charcoal.—What are the benefits to be derived from feeding charcoal?

One of the most valuable features of charcoal is that it has a very important cleansing influence on the fowl's system and is especially valuable when fed to laying hens during the breeding season, or in fact, at any time of the year. They do not have to be forced to eat it, as many are led to suppose, but will eat it of their own accord quite greedily, and seem to relish it, and it is really wonderful to see how much they will devour when they have the opportunity, and especially when

they have been deprived of it before. Since the charcoal thus acts as a cleanser to the fowl's system, it is quite valuable as a preventive of disease, and in this respect alone it will a great deal more than pay for the cost and trouble of obtaining and preparing it. It is one of the best antiseptics we have, so that it is easy to see at a glance what a great benefit it is to the health and general thrift of the fowls. Ashes from wood stoves, which contain the cinders of the wood, answer about the same purpose that charcoal does.

32. How Much Grain.—How much grain should be given to hens for dinner and supper?

It is impossible to say. One breed,—for instance, Plymouth Rocks,—will eat twice as much as another, say Leghorns or Hamburgs. The only general rule is,—feed what will be eaten up clean and quickly. If any food is left in sight half an hour after feeding they had too much and should have less next time. We give each pen of 15 fowls nine or ten handfuls at a feeding, but then, hands differ in size; your 14-year-old boy may give one of his handfuls to each bird, or 15 handfuls where you give 9 or 10. We must use judgment as to how much to feed, and aim to give just about enough without overfeeding.

33. Feeding Chicks.—What is the best feed to give young chicks, say until they are four or six weeks old? Is there any danger of over-feeding chicks of that age, or is it proper to keep a dish of cracked wheat or corn before them all the time? Is sweet milk, buttermilk or curds good for chicks? In fattening chickens for market, what kind of feeding gives the best results?

Mixed food, say wheat and cracked corn, (as soon as they can eat it,) with mashed potatoes. Also a little meat three times a week. We do not think you can feed growing chicks too much. The sweet milk, etc., is good if fresh, but must not be allowed to remain until a change occurs. Plenty of cracked corn and mashed potatoes are good for fattening chicks.

34. Length of Cut Clover.—Would you please tell me what is the proper length to cut clover?

For fowls do not cut in lengths longer than half an inch—the shorter the better.

35. Food for Light Brahmans.—I have thirteen Light Brahma hens. They are all well, but do not lay. Can you tell me what is the best food for them, and what proportion to feed?

If the hens are a year old (or more) probably they haven't fully recovered from their moult. If they are this year's pullets they may be too young yet. Light Brahmans can be got to lay at six months old, but it takes an expert in Light Brahma breeding to accomplish it. In the hands of the ordinary farmer they will be eight to ten months old before they begin to lay. The best grains are wheat and barley, with a very little corn and oats.

36. Raw Meat.—Having had poor luck with my hens in hatching this spring, I thought I would ask you if it is injurious to feed raw meat to hens whose eggs are to be used for hatching?

The raw meat, if lean, should be given three times a week. It will not affect the hatching of the eggs. Your hens are too fat.

37. To Make Grit.—Will ground bone answer for grit? Will granulated charcoal act in any measure as grit? Would our common granite, pounded or ground, be as good, or better, than gravel or sand?

Ground bone makes excellent grit, as it is hard and sharp, but flint, or some very hard substance is better. Charcoal is too soft and is used more as a corrective of bowel disorders. The common granite, pounded chinaware, glass, or any hard and sharp material answers.

38. First Day's Feed.—Should chicks be fed the first day out of shell?

Young chickens require neither food nor drink on the day on which they are hatched; in fact, both are injurious, as they interfere with the natural digestion of the yolk, which is absorbed into the bowels at the period of hatching and constitutes the first food. Neither should hens be dis-

turbed when the chickens are coming out of the shells, or the latter assisted, unless, indeed, by an experienced hand. More chickens are destroyed by the struggles of the hen when thus disturbed, and by untimely assistance of the over-anxious owner, than are saved by aid rendered at the period of hatching.

39. Fumigation.—State the best plan of fumigation.

Take a small furnace, or stove pot, or an iron kettle, into which place a pound or two of crude roll sulphur, broken up. Close the doors and windows (during the absence of the fowls in the forenoon), and set the contents of the vessel on fire in the centre of the floor. Shut the house up tight and leave it to smoke a couple of hours. This will finish the vermin completely, for the time being. Then open all the windows and doors for subsequent thorough ventilation, and your fowls will realize the benefit of this cleansing for weeks afterward.

40. Feeding for Winter Laying. How may the best results be obtained in this matter?

It will not conduce to winter laying if the hens are closely confined during the winter, and fed on grain principally. The poultryman must keep in view that the nitrogenous element is the most important, for it is the nitrogenous (albuminoids) matter that is the most difficult to obtain. Excess of grain allows a larger proportion of the carbonaceous matter than is sufficient, and, unless they are so situated as to permit of plenty of exercise, the hens will not lay a fair proportion of eggs. The "balanced ration" is the ration for hens as well as for cows, and it is the cheapest. Any ration that contains an excess of any particular food, will be fed at a loss. The safest plan is to feed a variety, for then fewer mistakes in feeding will be made, and the hens will be better supplied.

41. Feeding for Fattening.—When is the proper time to begin to feed fowls for fattening?

Fattening must not be begun until the

fowl has attained its full growth, before this, in fact, you cannot fatten well, although of course all extra food that will be digested is never lost. The pullets are best taken before they have begun to lay; the male birds when their tails begin to turn, that is when the two sickle feathers begin to top the straight feathers of the tail. The average age will be four months in summer and five to six in winter, but will be early according as the previous feeding has or has not been judiciously generous.

42. Feeding Mixed Grain.—Would you advise feeding grains mixed or separately?

We long ago gave up feeding mixed grains, as a little observation showed that a part of the birds rushed about and gobbled all of one kind, leaving the others to take what was left. If you feed wheat and corn mixed, part of your fowls will eat corn only and will grow inordinately fat. The others will eat wheat only and will lay eggs.

43. Green Foods.—We often speak of green foods. What would you class under this head?

The list comprises grass, and grass seeds, green corn, cabbages, clover, purslane, young beets, garlic, onions, leeks, lettuce, turnips, pumpkins, apples, kohlrabi, carrots, etc.

44. Sauer Kraut.—How shall I proceed to make a batch of sauer kraut for winter feed for fowls?

Cabbage is considered by many the best article, but is more expensive than some other kinds. It is apt to get too wilted for winter use, and it has therefore been recommended to put it down in the form of sauer kraut. This is prepared as follows: Line the barrel, tub or jar with cabbage leaves, and put in finely shredded cabbage in a layer three inches deep, well pressed down and sprinkled with four tablespoonfuls of salt. After five such layers have been put in, press down hard with a piece of board cut to fit the inside of the barrel and to thus press on the whole. Repeat

the process until the barrel is full, pressing down every four or five layers. Cover with leaves, and press it down with a heavy weight. Let it ferment three weeks, then skim, and cover with water. Keep in a cool dry place.

45. Hash for Poultry.—What ingredients are best to use in a poultry hash?

It may be made out of meat boiled and minced, mashed potatoes, wheat bran, corn meal, and oat meal, with a slight sprinkling of bone dust, salt and cayenne, the whole mixed with the liquor the meat was boiled in. Chandlers' scraps soaked over night in cold water and afterward minced, may serve in the place of meat.

46. Wet Foods.—Is it well to feed wet foods? How do they effect fowls?

Too wet food causes diarrhoea, dilutes the intestinal juices too much and soon knocks chickens off their legs. Always salt and pepper it a little. A good dough may be made of corn-meal, oat-meal, wheat bran and boiled vegetables mashed in the proportion of one-third of each, and wet with milk or water, the former preferred.

47. Bones as a Poultry Food.—With corn at \$1.50 per bushel, what does P. H. Jacobs consider the value of green bone as poultry food after it has passed through a bone cutter?

When corn reaches \$1.50 per bushel feed may well be considered high. The usual estimated allowance of corn, or its equivalent, for a hen, for one year, is five pecks, valued where corn is worth \$1.50 per bushel, at \$1.87½. At 20 cents per dozen for eggs (as an average price) a hen must lay 10 dozen eggs a year, to give a profit on the feed, and when the estimate is made for a whole flock the probability is that nine dozen eggs per year will be nearer the number. Green bones, cut (they cannot be ground), contain meat, oil and phosphate of lime. The bones also contain a considerable proportion of nitrogen independently of the adhering meat,

cartilage and marrow. As they differ in composition from grain, a proper comparison is not easily made between the two, especially as much depends on the kind of bones, and the amount of meat adhering to them, and whether it is fat or lean. Bones are more concentrated food than grain, about one ounce of cut bone being considered a fair allowance for each hen per day, or about 23 pounds per year. The bones alone are not sufficient, as the fowls will need also grain and green food, but bones may assist in reducing the quantity of grain required. Grain is not a complete food either, and in feeding bones, or other food, the allowance of five pecks of corn is reduced in proportion to the amount of other food given as a substitute. The value of the 23 pounds of green bones depends on the locality. I buy them from the butcher at two cents per pound, but probably could not get them at all if there were strong competition to secure them. The labor of grinding the bones is also an item, but cut bones just as they come from the mill, and as fine as sausage meat, are now on the market, in small boxes, at five cents per pound. At this price the 23 pounds would be valued at \$1.15, which would be cheaper than corn at \$1.87 $\frac{1}{2}$ for five pecks. The bone being more concentrated (containing less water than corn) is really more valuable, bulk for bulk, than corn. Leaving out the labor of grinding, the bones are valued at 46 cents. This estimate is made for a year's supply of corn and of bones. It must not be overlooked that bones alone will not answer, while the same may be stated of corn. Five pecks of corn a year is an allowance of about three ounces per day to each hen. By reducing the amount of grain to 1 $\frac{1}{2}$ ounce, and the amount of bone to half an ounce, the proportions will be fair, but of course, in feeding, it is to be considered that the hen requires less help in the shape of feed in summer; green food is also a factor, and

the condition and breed of the hens are very important considerations to say nothing of the fact that appetites differ, and that individual characteristics must be observed.

48-65. Miscellaneous Inquiries.

What shall I feed moulting hens? (Give variety of food. Meat twice a week. A teaspoonful of linseed meal in the grain daily.) Is buckwheat bran good for chicks when wet up? (Yes.) Are refuse crackers good for fowls? (Excellent.) How will it do to feed fowls with bran, mixed with potatoes? (It is excellent.) Is bran, corn meal and ground feed, mixed with water, good for a morning feed? (Yes.) Is popcorn equal to corn as food for fowls and chicks? (Yes, better, as it contains more nitrogen and phosphates.) Is stone coal and cinder from the stove good for laying hens? (Of no value except for the hens to pick over for grit.) Would crushed cuttle bone (same as used for canary birds) be of any benefit to chickens? Would it be a substitute for ordinary bone? (It is of no value.) Is the small, white clover as good as the red for use in feeding poultry? (Yes; it is fully equal to the red.) Is the refuse from a distillery good for chickens? Rye is what they use. (If fed moderately it is excellent.) Should buckwheat be fed whole or ground? (Either mode will answer, but it is usually fed whole.) How could a person keep green clover enough to feed 400 chickens all winter? (You cannot well keep it green without the use of a silo.) Is brewery grain injurious for hens to eat? Also cracked acorns, which they like so much. (Not injurious, if fed moderately.) Is lettuce good for young chickens, or will it make them sleepy and dumpish? (Excellent.) Will cotton-seed meal, if fed to fowls too much, cause the eggs to fail to hatch? (It is fattening.) Is water cress good for fowls? (Yes; excellent.)

CHAPTER II.

DISEASES OF POULTRY.

ROUP.

1.

W. Vale says:—It is a well-known fact that exposure to cold and wet will cause—

1. Roup, as, more correctly stated, will produce acute inflammatory action, resulting exudation, eventually embracing the entire surface of the membranes of the nose, mouth, throat and windpipe. If this exudation is not speedily checked it degenerates into pus, which is the discharge present in the last two stages of roup, and is the only mode in which this disease is disseminated.

2. In this stage, termed diphtheritic roup, the exudative membrane becoming permanent and pressing upon the subjacent tissue, acts as a foreign body, causing ulcerations to appear on the surface. These ulcerations are the so-called “cankers.”

3. This condition arrived at, there is a stagnation of the nutritive processes, the blood becomes impaired, scrofula and liver disease supervene.

These conclusions have been arrived at after studying the disease for three years, during which time diseased fowls have been experimented upon killing some at the various stages and dissecting them. They are easily cured in the first stage, curable in the second, and not worth curing in the third.

The following will be found to be un-

equaled treatment for all stages of the disease, combined with nutritious, soft food:

Pills.—Sulphate of copper, half grain; cayenne pepper, one grain; hydrastin, half grain; copaiba, three drops; Venetian turpentine, q. s. In pill night and morning.

Lotion.—Sulphate of copper quarter ounce, dissolved in a pint of rain water. To wash out the mouth and nostrils if required.

The simplest means of preventing their drinking water acting as a means of spreading the disease is to add a little tar water to it, prepared by stirring about one pound of tar in two gallons of water and decanting off the clear water as required for use.—*W. Vale*

Roup, says Stoddard’s “Poultry Diseases,” is a disease of the lining membrane of the beak, extending, however, to the whole head and throat, through the tear duct to the eye, and finally affecting the whole constitution. In fatal cases death ensues on three to eight days after the specific roup symptoms show themselves, and cases not treated are generally fatal whenever the malady appears as an epidemic in its severe form. After death the gall bladder and liver are found full of pus; the flesh has a bad odor and is soft, slimy and spongy, especially about the lungs. There are many other names

under which this malady is often described; generally swollen, though not always. The swelled eyes, diphtheria, sore head, hoarseness, bronchitis, asthma, snuffles, canker, and this hastens the fatal end. The disease blindness, influenza, sore throat, quinsy, etc., but some of these conditions may exist even when roup is not present. The causes of roup, like the causes of cholera, do not all need special enumeration here. Anything that lowers the tone of the fowl, bad food, bad housing, lice, bad ventilation, filthy houses, etc. A very prominent cause, however, is exposure to cold and wet. So prominent is this, and so marked is the commencement of the disease at the beak, that it might almost be called malignant catarrh, and it is possibly nothing more. Influenza in the human being sometimes assumes a distinctive form, and fowls are sometimes destroyed by colds alone. Roup, therefore, is most common in autumn and winter and where fowls are exposed to wet, cold draughts and damp, sunless quarters. The disease is contagious, from contact with the discharge, either when a diseased fowl touches another, or when a well fowl gets the discharge through the drinking fountain or otherwise. It can also, if brought into contact with the human eye, or with a wound or an abraded surface on the hand, cause serious inflammation, so that caution is needed in handling the fowl.

Symptoms.—It may come on suddenly, or slowly, with previous signs of general debility, moping, etc. The first signs are those of catarrh or cold in the head, dry cough and dull wheezing. Much fever; the fowl drinks eagerly. The comb and wattles may be pale or dark colored. The cold grows worse. There is a yellowish discharge, thin and watery at first, which grows thicker and thicker, and fills—in severe cases—throat, nostrils and eyes, the latter being closed and swollen even to the size of a walnut and the sides of the face may swell up. Pustules form all about the head and in the gullet, and discharge a frothy pus. The crop is gen-

eralized fowl can not see to eat or drink, charge has a bad odor, and this is the one most distinctive symptom of the roup. The clogging of the nostrils also seriously impedes the breathing. In all this, there does not seem to be any trace of special poison; it is like a typhoid influenza. One of the best means of detecting the approach of roup is to lift the wing of the suspected bird and see if there is not a spot there where the feathers are smeared with a discharge from the beak, which has rubbed off when the bird has put its head under its wing at night. Also invariably look at the nostrils and see if they are clean and free from the slightest clogging. Go the rounds at night with a lantern and inspect your birds. Listen then for rattling or sneezing.

Treatment.—First and foremost, put the diseased fowls by themselves, if possible, each one separately, and as to cleaning, etc., proceed exactly as recommended in the treatment of cholera. Take all possible means to prevent any of the discharge coming in contact with any other fowl, which renders thorough purification of the drinking vessels, etc., necessary. Some preparation of carbolic acid is good for this purpose. Give warm, stimulating food, house in a warm, dry place, with a sandy bottom. Various plans are followed for the internal treatment of the sick fowl, most of which are often successful. A mild purge at the beginning, as for instance a spoonful of castor oil is advisable. German Roup Pills are highly recommended. In addition to the above, some stimulants, such as mustard or pulsed ginger in pills as large as a pea, given thrice daily, with cayenne pepper in the food and water. The rule for pepper in the soft food is to season as strongly as if for human food; in the drink, make as strong as your own "pepper tea." Dr. Bennett recommends, thrice a day, a pill

of the size of a hazelnut made of equal parts of pulverized sulphur, powdered charcoal and new yeast. To this must be added the mustard, etc., stimulants. Powdered charcoal should be added freely to the soft food always in this disease. It purifies the digestive organs against the foul matter in the throat which the patient is obliged to swallow. In any plan of treatment, if the disease runs several days the purge should be repeated. Besides the dosing, the eyes, throat and face must be carefully attended to. "Wash the head thoroughly with castile soap-suds," or better, with Labarraque's Solution of Chlorinated Soda, mixed with two parts of water, several times a day if there be much discharge. If the throat be clogged *with the secretion*, clear out and use the *chl. sod.* here also, applying it with a camel's-hair brush. The swelling of the eyes may generally be reduced by patient bathing, but sometimes an operation is necessary to remove the cheesey lump of hardened secretion. Simply open with a sharp knife and remove the deposit. Nitric acid, applied with a feather into the nostril twice or thrice, is sometimes used, taking off the old scab at each application. Do not be in a hurry to return the fowl, after recovery, to the flock; keep it on some tonic for a time.

It will go from one bird to another with wonderous celerity, and the fancier who finds it fairly started in his flock should immediately remove the sick fowl to a place by itself. Upon old hens, or upon game cocks after they have been fought or "exercised," if it breaks out it is very hard to cure. Unless the fowl be a really valuable one, the process is so slow in removing it that it hardly pays for the trouble it causes. Upon games old cockers use saline washes and alum water, frequently bathing and cleansing the disordered parts, oftentimes with success at last. An alternate washing of burnt alum dissolved in new rum and chlorate of potash in a rum solution is excellent. The sore places should be cleansed thoroughly every morning and evening, and the canker removed daily. If taken in its very earliest stages the canker spots may be advantageously touched with a weak solution of nitrate of silver. This will burn off the sores if followed up before they get too soft and pulpy.

Another remedy is to first remove all cankers matter possible. Wash out the mouth and throat with water, then apply with a soft brush equal parts tincture of myrrh, borax and chlorate of potash till the sore looks clean, then dust with powdered borax till healed.

CANKER.

2. Canker shows itself upon the corners of the mouth usually, at first. Then the yellowish white spots appear upon the face and wattles. It spreads rapidly, however, and we have known cases where in thirty-six hours from its first showing the roof of the upper mandible, the tongue and the nostrils were completely covered with this offensive and troublesome sore. It should be taken in hand promptly, when first discovered. The bird affected with canker ought not be permitted to remain an hour in the same pen or run with well fowls.

THE GAPES.

3. Dr. M. G. Ellzey says:—Gapes is caused by a collection of small thread-like worms in the windpipe of the chicken. To kill these worms and not hurt the chicken is the thing to do. Coal oil of the cheaper grades is a more effectual insecticide than the refined. Take a small glass tube with a small rubber bulb, which apothecaries sell for a "medicine dropper," half fill it with coal oil, and inserting the tip into the windpipe, discharge the oil. The gapes are cured. A small oil can used for sewing machines will do in place of the medi-

cine dropper. Operate as follows: Place the chicken back down, between your knees, and hold him gently; open his bill and draw the tongue out. Seize the lower mandible and tongue thus drawn out between the forefinger and thumb nail of the left hand. This will bring into view the opening into the windpipe at the base of the tongue, into which gently insert the tube and discharge the oil. Close the bill, and hold the head still for a few seconds. Then let the chicken go and he will cough, spattering some of the oil out, but enough remains to destroy the worms and they will be coughed up and swallowed. The gapes continue for a time after the treatment, but the remedy will be effectual in every case if properly applied, and it may readily be repeated, if thought worth while, as often as necessary. After a little practice it is very easily applied and always succeeds.

The easiest treatment, says "*Poultry Diseases*," is to put some carbolic acid of the clear, transparent quality into a spoon or metal saucer and hold it over a lamp. Dense, white fumes will arise. Hold the chicken's head in these until it is nearly suffocated. Or, shut all the affected chickens into a box and fumigate them together, but watch them closely lest they be killed. Burned sulphur fumes will also do very well for this purpose. The vapor of spirits of turpentine and of creosote are also recommended. Another method is to take a feather, which has been stripped of all the webbed portion save its tip, and dip it into spirits of turpentine or kerosene and thrust it into the windpipe and turn it around several times. Some of the worms will be killed, some will come out with the feather, some will be coughed out at once; catch on a sheet of paper and burn them all. The opening of the windpipe is easily found at the base of the tongue.

As the subject is very important, we add still other methods of treatment recom-

mended. Camphor has been given in pills the size of a pea, with success. Alum and sulphur in the form of fine powder, blown down the throat, will destroy the worms. Lime in the air will also effect the purpose, and may be applied by putting the chickens into a box covered with fine muslin and sifting fine lime through this, but not so fast as to smother the chicken. Another method, by some deemed doubtful and dangerous, is to pinch the chicken's throat; this will crush the worms and cause them to loosen their hold, when they will be coughed up.

CHOLERA.

4.

This name is given to a disorder of obscure origin and character, which has proved itself to be one of the most rapidly destructive known to poultry keepers. Anything that tends to lower the constitutional vigor of the fowl will render it liable to an access of this disease. Unwholesome food, given at irregular periods, impure and stagnant water as a drink, exposure to the weather or to the depressing heat of the sun without shade, all of these causes, so readily enumerated, increase the liability of the fowl to this disorder, as well as to many others. Among the causes most prominent in fostering the disease is, it is agreed on all hands, an over-crowded condition of the coops. In the first place such a condition of things is directly depressing to the fowls; in the second place the bad air makes good soil for the development of poisonous "germs," if any such there be. Cholera has been known, however, to attack flocks that are not kept in houses at all. Such cases can be explained by the fact that fowls thus kept are generally badly protected from the weather, and besides this, they really crowd together at their roosting places, which are sure to be tainted by an accumulation of droppings.

Cholera seems also to be more prevalent in very hot and in very dry seasons.

It is thought to be infectious, but the infection does not seem to travel very far. Fowls roosting near fowls sick with cholera will catch it, but whether from them or from their droppings does not appear. This is the gist of the grounds of the statement that the specific poison which produces cholera is generated locally on premises where the disease exists.

Lesions.—The organ most changed is the *liver*. This is found enlarged, dark green, full of dark blood, congested and usually tender; it can easily be crushed in the hand. The *gizzard* is softer and sometimes much smaller than natural, and contains half-digested food. The *crop* and *intestines* are often full of sour, fermenting food, and ulcerated, and the intestines are much inflamed and “sore,” that is, excoriated. The testicles have been found much altered. The condition of the liver now is the main thing to be noted. Of course, you will find the brain, nerves and lungs more or less congested, full of darker blood than usual, and the heart perhaps enlarged. The blood is darker and thicker than usual, and this condition together with that of the liver, are thought by Dr. Dickie to exist in no other disease. The liver is not only the organ the most altered, but apparently it is the one attacked first.

Symptoms and Diagnosis.—The disease must be made out before death, rather from its sudden epidemic character than anything else. It comes suddenly in some cases; a fowl well to-day may be dead to-morrow, and a whole flock may be thus rapidly carried off. The discharges are thought by some authorities to be decisive. These are mild at first, are yellowish green, “or like sulphur and water,” becoming thinner, greener and more frothy as the disease goes on, and never stopping until the fowl is dead. “The breathing

becomes heavy and fast, the crop fills with mucus and wind; at last the food is not digested, the eyes close, and in a few hours the fowl dies.” There is weakness, sometimes extreme, at the commencement of the disease; the fowl may even be unable to stand well. It does not plume itself, and has a general sleepy, moping appearance. At a later period, the dark, thickened blood may turn the comb and wattles dark, or may readily flow through them, so that they become pale. There is much fever, great thirst, and a rapid, weak pulse. Cramps may occur. The fowl may die from the digestive disturbances, or apparently from paralysis of the heart or lungs, caused by the poisoned blood.

Treatment.—You cannot save the lives of all those attacked, neither will the same treatment that is good in the North succeed in the South. Remove your whole flock at once to clean quarters, if possible to some gravelly site that has never been used before for stock, and see that they are healthily housed there, and in all regards in a healthful condition. Separate the sick from the well, and if it were possible it would be well to have every hen, especially every sick hen, have a place apart. This is practicable enough with some valuable pets.

The following is the treatment of the sick fowl recommended in the valuable treatise of Dr. Dickie: “Fowls that are too sick to eat should have every four or five hours a pill made as follows: Blue Mass 60 grains, Pulverized Camphor 25 grains, Cayenne Pepper 30 grains, Pulverized Rhubarb 48 grains; Laudanum 60 drops. Mix and make into twenty pills. When they have had time to act, give half a teaspoonful of Castor Oil and ten drops of Laudanum to each. Let them drink scalded sour milk, with a gill of Douglass Mixture for every twenty-five head, a day. The treatment ought to change the character of the evacuations and make

them darker and more solid. When this happens, and not before, give them alum water or strong white oak bark tea to drink, and no other drink." This will tend to check the discharges.

DIARRHOEA AND DYSENTERY.

5.

Too much green food may cause it. Mr. Tegetmeier preferred twice a day a pill of powdered chalk five grains, rhubarb five grains, cayenne pepper three grains, to which in severe cases add half a grain of opium. Chalk, in fine powder, on well boiled rice will sometimes check it, without medicine. Six drops of camphorated spirit make a good dose, on barley meal. Restrict the drink, and put a little tincture of iron in it, or alum to check the diarrhoea. "Bone dust," Wright says, "prevents diarrhoea."

A bad diarrhoea, with bloody evacuations, probably affecting more the lower part of the gut is called dysentery. A bad disease to cure. Give a dose of castor oil, and follow with laudanum, five drops every few hours. Rest is important in diarrhoea and dysentery, as well as an early diagnosis from cholera. If you are not certain put the sick fowl by itself, which is a good point in the treatment of all these diseases, as the fowl is less apt to be disturbed. For diarrhoea, the homœopaths use ipecacuanha; arsenicum, if a bad diet be the cause, and chamomilla; each in doses every two hours. Diarrhoea, despite of treatment, may become very chronic. Try sweet oil internally.

6. **Indigestion.**—Give remedies for indigestion in fowls.

Indigestion may produce either constipation, by causing inflammation, or diarrhoea or dysentery. It may be accompanied by fever or loss of appetite, and apparently pain in the stomach. The crop is sometimes swollen, and the liver may become seriously affected. It is sometimes due to cold, but is generally

due to too much or too stimulating diet. Cut down the diet to a little soft, bland food, limit the water supply, and give cut green grass. Five grains of rhubarb changed every fourth day for one grain of calomel is recommended by Wright in addition. It is going to be very difficult to detect disorders of the liver, but a "sickly yellowish look about the head and comb," with general inactivity is to be looked for. Dosing will do no good; calomel, one grain every other day may be tried. Indigestion in young chickens may cause depression of the breast bone.

7. **Rheumatism.**—What is the cause and cure for rheumatism?

Rheumatism generally comes from exposure to cold wet, as by running in the wet grass in the morning, wet roosting places, etc. The malady is hereditary. The symptoms are leg weakness, stiff joints, or contraction of the toes. It may lead to a fatal inflammation of the heart. The treatment consists mainly in warm, dry quarters and good stimulating food; a little cooked meat every day. Rub the legs well with hot mustard water, afterwards wiping quite dry. Half a grain of opium (a quarter of a grain for a chicken of three months), night and morning will soothe the pain.

8. **Leg Weakness.**—My hens seem unable to move about on their legs. What ails them?

Fowls, especially cockerels that grow too fast, squat down on the ground. Sometimes there is also a deficiency of earthy matter in the bones. Bone dust may be freely used. Feed with substances which do not tend to fat; wheat, barley, meat. In warm weather dip the legs in cold water twice a day. Internally may be given iron, three to eight grains of the citrate daily, or some form of iron and quinine. Hinton's recipe is sulphate of iron one grain a day; strychnine one sixteenth of a grain, phosphate of lime five grains, sulphate of quinine half a grain; thrice daily.

9. Hens Don't Lay.—What is the matter with my hens? They have not laid any eggs for three months, and I notice that several have one eye closed as if they had no eye on that side of their head.

They probably have the roup, the closed eye indicating draughts over them.

10. Discharge at Nostrils.—Is a discharge at the nostrils a sure indication of roup?

Nearly all chicks at from eight to fifteen weeks of age have a running at nostrils. This is not roup discharge, at all, but arises from inaction of the mucous membranes of head and throat.

11. Cholera Symptoms.—What are the symptoms of chicken cholera, with cure?

Symptoms are intense thirst, debility, followed by prostration, with greenish droppings. Give a teaspoon of carbolic acid in a quart of water—no other drink.

12. Corn on Foot.—I have a very valuable Leghorn cock with a bad corn on his foot. Is there any cure for it?

Probably due to high roost. Keep him on straw. It is not easily cured with remedies.

13. Dampness.—I have out of seventy-five chickens six or eight roosters—no pullets—with extended crops, and they draw their heads down to their shoulders and act as though it was stiff. Their legs seem weak, and with difficulty they can get on to a low roost.

Due probably to damp season. Give them plenty of grit, and keep quarters dry. Add a teaspoon of citrate of ammonia and iron to each quart of drinking water.

14. Constipation.—I have had several cases of the hindquarters in chickens, both young and old, protruding fully an inch. Will you please tell me the cause and give me a remedy?

Probably due to constipation. Give a tablespoonful of linseed oil meal once a day, in the food, for six hens, and feed plenty of grass.

15. Indigestion.—I have a lot of chickens as large as quails. They act as though they were choked, open their mouths to breathe, make a noise like sneezing. Some have died. They eat well, have a free run, are fed corn meal wet with warm water and sour milk, and were growing nicely until taken with this trouble.

This is indigestion, caused primarily by

want of grit in the gizzard to grind up the food, but probably aggravated by the corn meal dough, which is one of the poorest foods upon which to bring up chicks. It sours in the crop, heats, etc., irritates the intestines, and causes no end of trouble, and then, it provides not one-fifth of the elements needed to produce good growth. If mixed half and half with shorts it would be greatly improved; if one-third corn meal, one-third shorts, and the other oatmeal (ground oats,) it would be a great deal better, and still fall short of a complete ration. There should be added beef scraps to furnish animal food to supply fledging material, bone meal to supply material for the frame, etc., and with chickens as large as quails certainly one feed a day should be wheat, whole, of course, supposing that they have mill stones in their gizzards to grind it.

16. Chicken-Pox.—Has a chicken the chicken-pox when its face, comb and wattles are covered with swellings that look like warts, with black scabs? If so, what will cure it?

Yes; anoint with a few drops of glycerine, and keep them warm and dry.

17. Skin Disease.—What is the matter with my Leghorn chicks? The down comes off and leaves a scale on their heads. Have looked for lice.

It may be due to some cutaneous disease. Try anointing the head, once a day, with a mixture composed of ten drops carbolic acid, one teaspoonful of cedar oil and a teaspoonful of glycerine.

18. Cholera Remedy.—How is 1 oz. of glycerine, 1 oz. of water, and ten drops of carbolic acid for cholera? Dose 5 drops in 12 hours.

It should prove very good.

19. Apoplexy.—I have lost some chickens that acted as though they had a spasm. On examining them found the skin had turned a dark red. They were taken suddenly, and tried to stand on their heads. I feed a warm feed in the morning, oats at noon, corn at night. What is it?

This was probably apoplexy—a sudden rush of blood to the head and rupture of a blood vessel there. The remedy is prevention. You have probably been overfeed-

ing. Stop the corn and feed wheat and barley instead, and give steamed clover or some such bulky food instead of the oats at noon every other day. Above all make them work for their food by having them have to scratch it up. Exercise is one of the best preventives of disease.

20. Tobacco for Mites.—I want a remedy for mites that will not harm the egg under a sitting hen.

Put tobacco refuse in the nest, and dust daily with fresh insect powder.

21. Treatment for Lice.—How can I get rid of lice on my fowls?

First clean up the premises. Saturate kerosene oil over every part, especially under side of roosts. Dust fowls well with insect powder. Give them a dust bath. Grease their heads and necks with warm lard. Repeat this twice or three times a week. It means hard work. Dip the fowls in a bath of carbolic acid (one part) and water 60 parts. An ointment of lard, sulphur and kerosene may be applied. Yellow snuff is recommended. Rub oil of fennel on head. Give tonics for debility.

22. Scabby Legs.—Please give a remedy for scabby legs:

Mix a teaspoonful of kerosene and a gill of lard. Apply on the legs once a week, the mixture to be warm.

23. Colds.—Please state what is the matter with cockerels or chickens when they make a noise at night while on their roost when drawing breath like a person does when he is gargling his throat. And what will cure it?

It is due to heavy cold, probably caused by a draught in poultry house. Sprinkle a pinch of chlorate of potash down the throat once a day.

24. Stiff Legs.—What is the cause and cure for my fowls? They have a kind of stiff legs; they raise the feet up to the body when walking.

It is caused by dampness, feeding sulphur, high roosts, or causes not known.

25. White Comb.—What makes the combs of some of my fowls turn white, and what is the treatment.

This disease consists of a white scurf or dust which begins at the base of the comb, and soon covers it all. It sometimes attacks the wattles. It is really a fungus growth, and most commonly attacks fowls that are kept in unhealthy localities and that do not have a good supply of fresh vegetables. Put sulphur and tar ointment on the combs. Give a dose of castor oil then a teaspoonful of powdered sulphur in the food every day for a week.

26. Trouble with Oviduct.—What treatment should be given for inflammation of the oviduct? What causes it?

It results from taking cold or from unwholesome food, or food that is over stimulating. The symptoms are general feverishness, feathers puffed out, continual straining on part of the hen, imperfect eggs, etc. Remove hen from cock and give hen a grain of calomel with one-tenth of a grain of tartar emetic in meal, followed the next day by another if required.

27. Worms.—What shall I give for internal worms?

Improve the general health of the fowl. Give a dose of castor oil, then follow with sulphur in food.

28. Scaly Leg.—What causes scaly legs and how can the trouble be cured?

It is due to a small parasitic insect. Stoddard's "Poultry Diseases" says these insects, their cast off skin, eggs, and the overgrowth of the epidermis causes grayish white swellings on the legs which may ulcerate." Apply an ointment of equal parts lard and coal tar. Vinegar and glycerine is also used. Some wash with a weak solution of sugar of lead in the morning applying ointment of creosote in the evening.

29. Bronchitis.—How should bronchitis be treated?

Bronchitis is an aggravated form of catarrh and a cough is present. After the fowl is put in a warm, dry place give

sweetened water slightly soured with sulphuric and nitric acid. A stimulant like cayenne or ginger will hasten recovery.

30. Worms in Fowls.—Will you please tell me how to rid hens of worms?

Feed a tablespoon of the well-known worm-seed to six hens, three times a week.

31. Chicken Cholera.—Will you please tell me a cure for chicken cholera?

Try a teaspoon of liquid carbolic acid in $\frac{1}{2}$ quarts of water and give no other water to drink.

32. Pip.—Please tell me the easiest and best way to take "Pip" off hens' tongues. Is the "Pip" injurious to the hens?

"Pip" is an inflammation of the tongue and mouth, and causes a growth of a horny scale on the point of the tongue, which prevents their feeding. The scale should be removed with the point of a sharp penknife, and a pinch of powdered chlorate of potash be dropped into the fowl's throat and upon her tongue. Any disease is injurious. Others say the tip should not be removed. They prescribe two or three grains of black pepper in fresh butter daily to stimulate digestion, as pip is considered to be caused by indigestion.

33. Swollen Crop.—What is the cause and cure of swollen crop?

If the crop is soft and puffy it is known as "sour crop" and if swollen and feverish is difficult to cure; if hard, the passage to the gizzard is probably obstructed. Taken in time, either case is easily remedied. Put the fowl in a coop by itself, allow it no water except a drink twice a day. Give a teaspoonful of castor oil for three mornings. If the crop is still full and hard at the end of that time open it and remove the contents, wash clean with warm water, sew it up with silk.

34. Discolored Comb.—Please tell me what to do for discoloration of combs in Black Minorca hens. Color underside seems all right but upper side has purple or darkish spots near base of comb.

Anoint daily with one part spirits turpentine and two parts alcohol.

35. Powdered Sulphur.—Would it be good policy to mix powdered sulphur with the food for fowls?

There is sulphur in the eggs, so it is safe to presume that a little in their food would be advantageous; but we should advise feeding but a very little, as it is loosening, and opens the pores of the skin, making the birds liable to colds.

36. Chicken Inflated.—I have a chicken whose skin is filled with air. At first I thought her a very fat creature, but upon examining her find she is soft as a sponge. What is the cause of it?

It is probable that there is a leak in her windpipe, which allows a little air to escape into her body every time she breathes. Better take off her head and eat her while she is in good flesh.

37. Egg Bound.—I have a White Leghorn pullet that is egg-bound. Is there anything that will benefit her?

Probably not. Dip a finger in sweet oil or cosmoline and insert in the egg passage. By careful manipulation the egg may be broken and the hen relieved. If the bird is valuable it may be worth while to attempt to save her.

38. Rheumatism.—I am puzzled to know what is the matter with chickens that lose all strength in their feet and legs; the toes seem to cramp up, and they are unable to stand. They are hearty and eat as much as usual.

This is probably rheumatism, which affects chicks and fowls just as it does human beings, and is due to acid in the blood, or an acidulous condition of the blood. Rub the legs and feet with a good strong liniment, and feed warming, stimulating food; give them milk to drink.

39. Red Mites.—How shall I proceed to get the hen house free of red mites?

The red vermin is the red spider louse or red mite. Kerosene kills them at once, and as their haunts are the cracks and crevices of the roosting poles, and the sides of buildings, nest boxes, etc., they are easy to destroy. If they are numerous

go over the whole inside of the building with hot whitewash, sopping it on freely, so every crack and crevice is filled. Clean out and whitewash nest boxes, clean up the floor and put in fresh sand, and start all fresh and clean.

40. A Fall Tonic.—Will you name a good tonic for moulting hens?

The moulting hens will be greatly relieved and assisted in feathering if given some kind of tonic, and one of the best is to mix together 20 grains of quinine, 20 grains of chloride of iron, 40 grains of red pepper, one pound of fenugreek, one ounce of sulphur, and half a pound of salt. Put a teaspoonful of the mixture in some kind of soft food, for every six hens, three times a week. Give meat occasionally, and feed mixed grains. Moulting fowls take cold very easily should the weather change suddenly, and care must be taken to keep them warm and dry.

41. Crop Bound, Probably.—I have a hen with chicks. When she is held up by the feet, head downward, water runs from her mouth. Sometimes this occurs when she leans over to feed. Please tell me what it is and the remedy.

It is probably a case of crop bound, or of the obstruction of the passage leading from the crop to the gizzard. This would cause inordinate thirst, and hunger also, and she would eat and drink continuously, to satisfy that appetite and thirst. Examine the crop by feeling, and see if the trouble is there. If the trouble is lower down, a dose of castor oil may reach it, but probably the hatchet is the better cure.

42. A Good Tonic.—I would like a prescription for a good tonic.

Tincture of perchloride of iron, 2 drachms; compound tincture of gentian, 2 drachms; lime water, 2 ounces; eggs beaten, 2 ounces; cod liver oil, 4 ounces. Shake thoroughly up into an emulsion, and give two tablespoonfuls three times a day. In scrofulous tendency or hereditary weakness the above is an excellent stock

medicine, and may be given to young chicks in ten drop doses mixed with the food. It is often valuable in diarrhoea, and especially so during moult.

43. Diarrhoea in Chicks.—A good receipt for diarrhoea in young chicks about two weeks old is wanted.

Ground saffron, $\frac{1}{4}$ ounce, gentian $\frac{1}{2}$ ounce, red pepper 10 grains. Give a thimble full twice a day.

44. Vertigo.—Hens run about as if confused and didn't know which way to turn, if suddenly disturbed, well in other respects. What is the matter?

It is vertigo: cause, too much blood, or too fat. Cure, keep her in a cool, shady place, feed sparingly, and give her occasionally three grains of jalap.

45. Catarrh.—What is catarrh and how can it be cured?

Catarrh in fowls is only another name for cold in the head; the general symptoms are a watery discharge from the eyes and nostrils. Catarrh is identical in appearance with the first stages of the roup. If it extends to the air tubes, then it is called bronchitis, and one of the symptoms is the coughing of the fowl. As soon as the watery discharge at the nostrils is discovered, the fowl should be taken to a dry, warm room and fed sparingly on soft food either warm or luke-warm, and aconite should be mixed with the drinking water in the proportion of eight drops of the tincture to a pint of water. If the discharge at the beak becomes of a putrid and offensive character, you may consider that the fowl has the roup. In all cases of catarrh look out for roup.

46. Sour Clover-Ensilage.—My hens are very loose; what would be good to help it? I fed them some clover put up in barrels, but it is all wet and seems sour. I steamed it and then mixed meal with it for their morning feed. I give boiled potatoes with meal, also.

The ensilage is sour and rotten probably, and unfit to use. Give each fowl a teaspoonful of castor oil, and follow it up a few hours later with 5 grains of rhubarb

and 10 grains of carbonate of soda, or, if you prefer, one grain of opium. If the diarrhoea is severe a pill containing one grain each of tannic acid and opium would be effectual. During the attack, and for a little time after, feed soft food only, and no green vegetables.

47. Sore Head.—What is a good remedy for sore head in fowls?

Epsom salts is the best remedy for sore-head. Salts will cure all ordinary cases, and will certainly prevent this disagreeable disease spreading in flock. Feed in soft food or put in drinking water. A tablespoonful to a gallon of dough or a gallon of drinking water is the proportion. Continue its use every other day until disease is eradicated from the flock. In addition to salts in the water, take equal parts pulverized table salt, bluestone and lard, or axle grease, well mixed, and grease the head and face of the fowls or chicks that are affected.

48. Disinfectant.—Give a recipe for a cheap but effective disinfectant

A cheap and good disinfectant to use about poultry houses and yards when contagious fowl diseases are present or feared, is made by dissolving three pounds of copperas in five gallons of water, and adding one pint of crude carbolic acid. Sprinkle about the house and yard with a common watering-pot.

49. Bromide of Potash.—How should Bromide of Potash be administered to fowls?

Bromide of potash is recommended for roup and brain disorders. Give 5 to 7 grains a day, to each sick fowl, also gargle the throats with kerosene oil, and inject a few drops into the nostrils. As a preventive of roup, give two grains to each fowl in their drinking water.

50. Condition Powders.—Will you give a formula for a good condition powder?

Carbonate of iron, 1 oz; Anise Seed, 2 oz; Powdered Ginger, 6 oz; Mustard, 1

oz; Table Salt, 2 oz; Sulphur, 2 oz; Licorice, 4 oz; Powdered Charcoal, 14 oz. These powdered and mixed thoroughly make two pounds of good condition powders, and if kept in a tight box will be serviceable for a long time. A teaspoonful in ten quarts of soft feed, or in that proportion, fed every day in warm weather, or every other day in stormy and cold weather will prove of service. For growing chicks, one-half the amount of powders in the same quantity of feed is sufficient. A teaspoonful of the tincture of iron to each gallon of drinking water should be provided in all bad seasons.

51. Douglass' Mixture.—What is Douglass's Mixture?

Douglass' Mixture, one of the best poultry tonics, is made as follows: Dissolve one pound of sulphate of iron (copperas) in two gallons of water, adding 2 ounces of sulphuric acid. (Handle the sulphuric acid carefully, as it is a deadly poison). Dose, 1 oz. to each quart of drinking water. Do not use this oftener than once or twice a week.

52. Frosted Comb.—Is there a cure for frosted combs?

A cure for frosted or frozen combs and wattles is equal parts of turpentine and sweet oil applied twice daily as soon as discovered. Glycerine is also good.

53. Vent Gleet.—My chickens, young and old, seem to be drooping. They are fed whole corn, oats and wheat middlings. They appear to be loose, also; examination shows a sore at vent, from which matter runs and a very disagreeable odor. Do you think the best cure is an axe?

It is impossible to guess the difficulty with the drooping fowls, young or old. It may be lice—a very fruitful source of drooping and debility; and it may be improper feeding and want of grit to grind the food. The latter is one of the most frequent causes of indigestion and kindred troubles. Vent gleet is due to inflammatory action in the mucous membrane lining

ing the Cloaca, *i. e.*, the chamber or pouch connected with the rectum, and into which is received the urinary and genital ducts. It is contagious. Administer half a teaspoonful of Epsom salts; bathe the vent with warm barley water, taking care to remove all incrustation; then inject twice or thrice daily one part carbolic acid to forty of olive oil, using a desert spoonful each time. On the third day commence with copaiba, giving three drops twice a day in a teaspoonful of linseed oil. The diet must be perfectly plain and unstimulating, and so long as the disease continues the bird should be isolated.

54. Insects in Brooder.—May I ask you how to remove the insects from my chicks, three days old, now in a brooder, hatched by hens?

Dust them with *fresh* insect powder every day, and rub the brooder with kerosene oil. Smear a few drops of warm lard on the heads and necks of the chicks twice a week.

55. Lice Again.—What is wrong with fowls when they stand with heads thrown back on shoulders, and legs weak? Will fowls when affected with lice show a difference in droppings? What is wrong with chicks when their droppings are yellowish and green?

A reply to all of the above is that there is a probability that your fowls have the large lice on the skin of the head and necks. Apply warm lard oil. Clean up the premises.

56. Warts. Can you tell me what will cure warts on chickens? We have one, a Leghorn pullet, that has eight on her face, two of which are on her eye. They are growing rapidly, and we fear will close the eye entirely. What causes it?

It may be chicken pox, or the work of a minute parasite. Try an ointment, applied daily, for a week, of ten parts sweet oil, one part spirits turpentine, one of cedar oil, and half part carbolic acid.

57. Lumps on Bill.—What is the cause of the dark brown excrescences (lumps) that appear on the bills of fowls, and also upon the soft tissues of the head?

Probably due to parasitic causes.

Anoint with one part spirits turpentine and two parts glycerine.

58. Crooked Breast Bones.—What causes crooked breast bones?

Crowding together. Also improperly constructed roosts.

59. Boil on Foot.—Please inform me how to cure a boil on top of the foot of a hen. It extends under her foot also. She can scarcely walk.

It may be bumble foot, due to high roost. If soft, lance it and wash once a day with a solution of twenty drops carbolic acid in a gill of warm water. Keep it bound up with a soft rag saturated with warm mutton suet.

60. Symptoms of Indigestion. Will you tell me if the following are symptoms of cholera: greenish, yellow diarrhoea; little appetite; heads bright; live about ten days or two weeks; have lost four?

It is not cholera. Fowls always have intense thirst with cholera. It is indigestion. Avoid all grain food for awhile, and give pounded crockery ware for grit. A tablespoon of ground ginger, in soft food, once a day, for ten hens, will be beneficial.

61. Scouring.—Have a game pullet that has not laid for a month. Her manure is very soft, like white of an egg, and it stays around the vent. Her comb is beginning to shrink; she will drink a little, but not eat much. Could find no lice.

The pullet is probably scouring, caused perhaps, by too much soft food, certainly by improper diet. Calomel and blue mass, in two grain doses, or four grains of blue mass mixed with two grains each of cayenne pepper and gum camphor, may be given twice a day. After the character of the evacuations has changed, become darker and more solid, give tonics of iron and cayenne pepper in very small doses for a time.

62. Liver Disease.—Three of my hens died. One seemed perfectly healthy, was laying nearly every day, had a red comb, and I could see nothing the matter with it. The liver of another was five times as large as it should be, and the other had been ailing quite a while, but

would always eat. The liver of this one had hard white spots as large as a quarter dollar on it. Is this cholera or liver complaint?

Should say the last was liver disease, second enlargement of the liver, (or fatty degeneration of liver), and the first apoplexy. Fowls not infrequently drop dead of this trouble. One evening a fowl fluttered and fell from the roost as the writer turned to leave the pen after looking things over, and she was dead (though limp) when he got to her two seconds later. There are no warning symptoms in such a case; the fowl simply drops dead. The last case cited above certainly wasn't cholera, "which is accompanied by a violent diarrhoea, and is rapidly fatal." Small doses of mercury, followed by cod liver oil, are recommended; the hatchet is surest.

63. Tumor.—About the 22d of February a sore about the size of walnut appeared on one of my hen's necks. I tried several remedies, including camphor and lard, coal oil, etc., but not being relieved, killed her. What was the cause of it?

It may have been a tumor, but such swellings are often due to the effects of roup, which remains in the blood, only to find vent in such manner. You did right to destroy the bird.

64. Lack of Grit. I had several pullets sick, and one died. Their crops were full of food, and quite hard. I fed soft food in the morning, and grain at noon and night. What is in their crops had been there several days. A neighbor thought it was crop bound, but I don't think so many would be attacked at one time.

This is probably want of grit. The want of grit in the crop and gizzard is to a fowl what lack of teeth would be to us. A toothless person could be fed on soups, etc., and life sustained; but 'twould be a profitless existence. What can biddy do when she has nothing with which to grind up the food in the gizzard? She simply starves to death. Lack of grit is one of the most fruitful causes of fowl ills that we have.

65. Cause of Scaly Legs.—What is the cause of scales on the legs of fowls, and what is the best remedy to remove them?

It is the work of a parasite. Anoint once a week with melted lard.

66. Sore Eyes.—My chicks are troubled with sore eyes. They swell, run and stick together, but after they are washed and open they are all right, but the next morning it is the same. The chicks are not sick. What is the cause and remedy?

Keep them from draughts. It is simply cold in the eyes, due to wind. Anoint with a few drops of glycerine once a day.

67. Gradual Wasting.—What is the matter with my fowls? they have their liberty and plenty of feed, but become poor and poorer, gradually wasting away, and dying after a month. They also have diarrhoea.

Probably the large tick lice are at work. Grease heads and necks twice a week, with warm lard.

68. Canker.—My hens have some kind of a disease. They choke, their mouths are filled with hard matter, and if you take it off it will bleed. Their eyes run matter.

They have canker.

With a soft rag, on a stick, swab the mouths with a solution made by dissolving a piece of blue vitriol, as large as a chestnut, in a gill of water. Inject a few drops of kerosene in each nostril.

69. The Florida Flea.—What will kill the Florida chicken flea? It is something like a small tick, burying its head in the flesh around the eyes, on the combs, or wherever it can find a place about the head free from feathers, but it jumps like a flea.

Try anointing the head with the following: Cotton seed oil or lard, one gill; oil of pennyroyal, one teaspoonful; oil of sassafras, one teaspoonful. They are not easily driven off.

70. Enteritis.—Having some fowls affected with inflammation of the bowels, or enteritis, would like to know its cause.

Enteritis, or inflammation of the bowels, is a common disorder among poultry. It has so many symptoms in common with chicken cholera, is so rapid in its course, that many pronounce it real cholera. Acute, chronic, dysenteric and membranous enteritis are the most common forms. Acute enteritis is a disease that

often attacks fowls occupying confined runs and uncleanly kept houses, or those fed on damaged grains, decomposed meat or sour meal and irritating seeds or plants. It is occasionally caused by surfeiting the fowls with improper food, indigestion, the rupture of an ovum and its escape into the abdominal cavity, sharp splinters of bone piercing some of the intestines, etc. The first period of the disease often passes unnoticed, especially where the poultry does not receive the closest attention. However the first day the bird is dejected, loses its naturally healthy and cheerful appearance, and is without appetite. The second day the crop is found empty, the beak slightly opened, the mucus membrane of the mouth dry, the pulse quick and irregular, and the skin hot. From this time the symptoms become intensified as the disease progresses. A diarrhoea is noticed from the first—the matter passed being at first nearly solid, then becoming semi-liquid and finally very thin; serous, of a whitish, grayish, yellowish color, and a disagreeable odor. The course of the disease does not extend over three or four days, and unless its severity is mitigated, either by natural causes or proper treatment; the bird at this time indicates extreme suffering by agitating its wings, stretching its neck and frequently opening its mouth—death soon following.

71. Water Crop.—How is water crop described and how treated?

The symptoms of a bird with water crop is a poor appetite, but it craves and drinks water until its crop is distended and becomes sour. To treat, take a bowl of warm water, in which dissolve a quarter of a teaspoon of baking soda, and take the fowl's head in the left hand and with the body under the arm, holding head downward, with the neck distended, hold

the beak open with the right hand and manipulate the contents of the crop down and out of the mouth. Then give a good dose of soda water; a spoonful is sufficient. Manipulate as before, rinsing out the crop well and being careful not to irritate the crop so as to cause inflammation. Coop the chick by itself, feed sparingly a few days with bread and scraps from the table, with a sprinkling of charcoal. Put five drops of nitric acid in the drinking water. This will generally cure it.

72. Egg Bound.—What are the symptoms and treatment of this difficulty?

The hen comes off the nest without laying and walks about distressed, hanging down her wings. Sometimes she remains on the nest. Give a full dose of castor oil. If this is unsuccessful, wash the vent well with warm water and then pass in an oiled feather, or better, inject an ounce of sweet oil. The egg is too large. This is more common with Polish fowls. Eggs have been known to accumulate here and form a large tumor.

73. Hernia.—How shall hernia be treated in fowls?

Sometimes the parts which protrude may be returned by bathing them in blood warm water, oiling them and pressing back gently. Feed the hen on food that is not productive of eggs, such as rice or potatoes, and counteract any tendency toward inflammation.

74. Sore Eyes.—Have a fowl that has sore eyes but does not appear to have roup. What about her?

Fowls sometimes suffer from a temporary blindness when they do not have roup. Make a wash of weak white vitriol, or alum water, or alum and camphor combined.

CHAPTER III.

ABOUT EGGS.

1. Cure for Curs.—Please let me know how to prevent my setter dog from eating eggs.

Place blown eggs containing red pepper where he can get them. It is not easy to cure such a dog.

2. About Dark Shells.—Do all pure Light Brahmans lay a dark brown egg? Out of my flock of fifteen a few lay dark brown eggs, the others very light brown. What other breeds are there that lay dark brown eggs? Do any of the Plymouth Rocks lay them?

The Brahmans, both Light and Dark, lay brown eggs. Some are darker brown than others, and if you want a very dark brown egg you should hatch chickens from the very dark eggs only; by that means you could, in two or three generations, get a strain that would lay all coffee colored eggs. The Cochins and Langshans—the Asiatic varieties, also the Javas lay brown eggs. There is a strain of Plymouth Rocks that lay a quite brown egg, some of them very dark brown, ranging from that to cream color. Have known of a White Wyandotte hen that lay an egg as dark brown as the average Brahma egg. So dark were they that a customer wrote us that we had put a Brahma egg into a basket of White Wyandotte eggs sent him.

3. Preserving With Hot Water.—I have recently seen a method of preserving eggs by placing them in a wire basket and dropping them in boiling water. The party who gave this method, said eggs so served could not be distinguished after six months from fresh laid eggs. He kept them on the big end.

Boiling water will hermetically seal the pores and aid in preserving the eggs, but will not prevent them from becoming stale in six months. Try it on a small scale first.

4. Average Production.—How many dozen eggs will a fair hen average to lay in a year?

If he lays ten dozens she will do well. Eight dozens is nearer the average.

5. Change of Male.—How long after changing roosters should eggs be taken for hatching?

About one month.

6. How Much Cold.—How many degrees of cold will eggs (that are being saved for hatching) stand, and not spoil them for hatching purposes?

Should not be exposed to lower than 40 degrees above zero. An egg freezes at about 10 degrees above zero, which kills the germ.

7. The White and Yolk.—What makes the white of an egg so large and the yolk so small?

Due to greater amount of water.

8. How Prolific.—Please let me know how many eggs Leghorns, Black Spanish, Minorcas, Hamburgs, Light Brahmans, Plymouth Rocks and Wyandottes lay in a year on an average?

The Leghorns, Black Spanish, Minorcas and Hamburgs, are usually credited with about 200 a piece a year; Light Brahmans about 100 to 125; the Plymouth Rocks and Wyandottes about 150.

9. Packing for Shipment.—What is the best method of packing eggs for shipment?

In packing eggs, it is now universally the custom to wrap each egg in paper; this is an essential precaution. But in regard to the material used for filling in between the eggs, many sorts are used, but all are not good. Some breeders use cedar and other hard wood, in the form of small chips, nearly the size of peas. This is bad, as being wholly wanting in elasticity. Of the sorts in general use, the chaff from a hay mow is least objectionable, as eggs packed in it frequently go long distances without breaking and hatch well. But in our estimation the very best material for packing, and one well adapted to come into general use, is well dried sawdust, from hard wood; that from pine is objectionable, as there is a possibility that the turpentine contained in it may injure the vitality of the eggs, and therefore it is best avoided.

As to the covering placed over the basket, when the eggs and the final layer of packing are in, a piece of cotton cloth, cut to turn down and be secured on the sides, is the one most generally used. But we have a much better covering to recommend. Where cloth is used, the most customary way of fastening it is by using carpet needle and cotton twine, sewing it down with a few long stitches, through the interstices of the splints. Incredible as it may appear, we have seen baskets of eggs sent out by a breeder, where this cloth cover was secured by tacks driven with a hammer, entirely around the hoop which formed the top of the basket. Inquiry brought out the fact that the eggs shipped by this breeder were almost a total failure in point of hatching. Any one who has seen the care with which a sitting hen or turkey, on returning to her nest, creeps upon the eggs for which she has so tender an instinct, feels that the harsh contact of hammer and tacks with valuable eggs containing the germs of life is not in harmony with natural laws.

10. Small in Size.—What will cure a hen of laying eggs far too small for her size?

The trouble with such hens is that they are too old to be of any further use. Such eggs are sterile. When hens are young and do thus, the cause is generally high feeding, and a course of light diet will help the matter. The venerable hen may have been useful in her day, but now she needs to be quietly seized, decapitated, dressed and sent away to parboil slowly for a few hours, then browned quickly in a hot oven.

11. Different Flavors.—Can the flavor of eggs be changed by the feed?

To have eggs of fine flavor the hens should be fed on clean food. Fowls fed on putrid meat, decayed or decaying animal substances, will lay eggs not fit to eat. Proof of how the food affects the egg may be had by feeding a number of hens on onions for a certain period. The eggs will become so strongly tainted with the onion flavor as to be unpalatable. Where the farmer allows his fowls unlimited range, it may be said that it is impossible to control their feed, but under no circumstances should the fowls be allowed access to filthy substances.

12. Soft-Shelled Layers.—I am just starting in raising chickens, and would like a little information. My pullets have plenty of lime in the shape of plastering and oyster shells, but some of them lay soft-shelled eggs, and I should like very much to know what I should do to stop them.

Without going into the discussion as to whether oyster shell and lime will prevent fowls laying soft-shelled eggs, we may say that the probable cause of your pullets' eggs being destitute of the usual calcareous covering is to be found in one of three directions: they are either too fat, do not have exercise enough or there is something wrong with the egg-producing organs. Some hens obstinately continue to lay soft-shelled eggs, no matter how they are fed or managed. And in such cases we can safely conclude that they are not perfectly healthy, and the best of all cures is a free range, with plenty of green food and exercise.

13. Should They Rest. Does it injure eggs to ship them long distances? and how long should they rest before being put in incubators?

There is a foolish notion prevailing among some fowl breeders, that eggs which have been shipped a distance should rest a day or two before being placed in an incubator. As soon as the hens are ready to set, or the incubator ready for work, place the eggs under or in at once; they will rest as comfortably in either place as elsewhere, in fact, better; for everybody knows that the fresher the eggs the more chicks they will yield, and the healthier the chicks. The germ floats to the top of the egg, and will find its way there in a half minute, at the most, if revolved a hundred times an hour; and the yolk will find its place just as soon if it has not been broken, in which case it might rest a month or a year and never hatch. We have tried numerous lots of eggs, travelling from 80 to 3,500 miles, and always found that the sooner incubation was started the better the result.

14. Dark and White in Color.—Which breeds of fowls lay dark colored eggs? Which lay white?

Either of the following breeds will be found to lay dark, viz: Cochins, Brahma's, Wyandottes, Plymouth Rocks or Langshans. Where eggs with white shells are wished, they will be produced by Leghorns, Minorcas, Andalusians, Polands, Hamburgs, Games, Houdans or Dorkings. Where both are required, Plymouth Rocks or Wyandottes, with the Leghorn or Minorcas, will be found to fill the demand most satisfactorily.

15. Some Queries. 1. How long can one keep eggs for setting without injury? 2. Should they be turned; if so how often? 3. What is the best position to keep them in?

1. From one to two weeks if properly cared for, but the fresher they are set the better the results will be. 2. At least every other day. 3. Lying on the side.

16. Greater Production.—Can egg production be increased?

To increase the laying, every other day

give one teaspoonful of cayenne pepper, pulverized, to one dozen fowls with their food. Keep hens free from lice.

17. About Imports. Can you give me some idea of the amount of eggs imported?

Statistics show us that 17 eggs are annually imported from France for every man, woman and child of this population. Bearing in mind the large importations from Ireland and other countries, and the large number produced here, proves the great importance of eggs as a national food. Assuming the population of France to be thirty-seven to forty millions and to be divided into families of five, for every single individual over 14 eggs are exported annually, and the value of even the English trade exceeds 1 £ sterling for every six families in the nation. As a rule, egg production is the best part of the business where fowls are raised for market.

18. How to Test. When should incubating eggs be tested and how?

Eggs ought to be tested when seven days old. This is done by holding them before a candle or strong light, and looking through them, the hand shading the light from the eyes. If clear the egg is infertile, but is quite good for cooking. If it is dark in the centre, shading off to lighter at the edges, it is fertile. Two days before hatching they can again be tested, but in water heated to 105 degrees, or as hot as the hand can bear it. The eggs containing live chickens will be seen to jump about, while the dead eggs will either sink or float motionlessly. This water test will soften the shell and assist hatching.

19. Classification.—How are eggs classified in the market?

The Boston Chamber of Commerce has decided to classify eggs as follows: Extras, firsts, seconds, thirds and known marks. Extras shall comprise the very best qualities fresh-laid, clean eggs in season, put up in the best manner, where every condition necessary to place fine eggs in Boston market

has been complied with. Firsts shall comprise fine marks of eggs such as come in carload lots, or smaller lots, and are packed in fine order, fresh in season and reasonably clean, such stock as gives satisfaction to most consumers. Seconds shall comprise all stock that is merchantable and inferior to firsts. Thirds shall comprise all poor stock in bad order, rotten, etc.; stock not considered really merchantable. Known marks shall comprise such sorts as are well known to the trade under some particular designation or mark, shall be of such quality as those familiar with the mark generally understand it to be, in the season in which it is offered. Extra to pass at the mark must not lose to exceed one dozen per 100 dozen, and firsts not more than two dozen per 100 or one and a half dozen per barrel, if sold in barrels.

20. Washing Before Incubation.—Is it not a good plan to wash eggs that come from other yards, before incubation?

Before eggs obtained from strange yards are placed under a hen, or into a hatching machine, they should be carefully washed with soap and warm water, rinsed in clean water, and wiped quite dry. If this is carefully done there is not any possibility of injuring the eggs; on the contrary, they will be in better condition, as the pores of the shell have been freed from dirt. We believe that disease germs may be conveyed in the dirt attached to the shell of an egg. Do not wash the eggs until they are about to be placed in a machine or under a hen. We would suggest that it is advisable to lower the temperature in incubators during the last three days of incubation. Our reasons are based on the fact that the chick, for at least forty-eight hours before it chips the shell, has sufficient animal heat of its own to sustain life and hatch out in an outside temperature of less than 80 degrees. Therefore, during the last few days, there is evidently no need to keep up the usual high temperature, which, we consider, is injurious to the chicks, and may account for many deaths in the shell.

21. How to Pack in Jars.—Will you state a good method of packing eggs?

Slake a peck of clean lime, pour in six pails of water and drop in three quarts of salt. Stir until all is dissolved; then let it settle and it is ready for use. Pack the eggs in jars, pour on the thinner lime water, cover the jar with a cloth, and over this spread a coating of the thicker portion of the lime. The eggs will keep as long as you will wish them to. The jars must not be filled too full, as the water must never be allowed to get below the tops of the eggs. Each peck of lime will preserve more than a hundred dozen of eggs. A six gallon jar will hold twenty dozen if rightly packed. The expense is very little, the jars will last many years, and the returns are sure and not far in the future.

22. Dry Packing. Is dry packing as safe as moist packing for eggs?

Dry packing for eggs is as safe as wet packing and much more convenient, but eggs must be kept from the air and turned twice per week or they will adhere to the shell. Pack in small boxes with light covers so they may be turned over without handling the eggs. Use dry salt, dust, plaster, fine ashes, or meal and keep in a cool place, 40 to 60 degrees. By this means strictly fresh eggs may be kept from two to six months and frequently one, by holding them three months, will find a rise of 5 to 12 cents per dozen. Infertile eggs keep better than fertile ones. To sell eggs at 12 to 16 cents, as many do, is folly, and although preserved eggs do not look as well nor bring quite the price of fresh ones, they may be depended on and the process pays.

23. The Best Temperature.—Will you please inform me at what temperature eggs for hatching should be kept, and if it is best to keep them in the cellar providing it is warm enough?

Not over 60 degrees, if possible—the cooler the better. Turn them three times a week, half over. They should keep a month and hatch.

CHAPTER IV.

INCUBATORS AND INCUBATION.

USEFUL RULES.

Mr. P. H. Jacobs, in his *Poultry Keeper*, gives some rules which may be useful. Whenever you wish to ask a question about incubators look over these:—

RULES FOR HATCHING.

1. Hatching chicks with incubator is a winter pursuit.

2. The hen seldom sits in winter, hence she and the incubator do not conflict.

3. Eggs in winter should not hatch as well as eggs under hens in April.

4. Hens that lay in winter cannot produce as fertile eggs at that time as in the spring, for the cold season prevents exercise, the hens become fat, and the pullets are not as fully matured, while the male, if he has a frosted comb, suffers from cold, or becomes too fat, is unserviceable.

5. Eggs are sometimes chilled in winter. When you buy them you take many chances.

6. Do not use extra large eggs, or small eggs. Have all eggs of normal size, and of perfect shape.

7. In winter the hen will not hatch one-half of her eggs nor raise one-third of her chicks.

8. Do not be afraid to *watch* your incubator. It pays as well to keep awake all night to watch a hundred chicks hatch out as it does to keep awake to save a \$5 calf from loss when it is dropped, and the chicks are worth more than the calf.

9. No incubator has brains. It will regulate, but cannot *think*.

10. When chicks die in the shell the chances are that too much draught of air came over them. When a hen is hatching she will fight if even a feather is lifted from her. She will allow not the slightest change of temperature, and she will hatch as well in a dry place as in a moist location.

11. Dry, warm nests in winter, and moist nests in summer, is an old proverb, hence the moisture depends on the season. Less is required in the incubator in winter.

12. Thermometers change. A thermometer may be correct one week and wrong the next. They should be tested frequently.

13. As the chicks progress in the eggs they give off heat, hence be careful of the lamp, hot water, or whatever the source of heat may be.

14. Too much moisture covers the egg and excludes the air from the chicks within the eggs.

15. No currents of air can pass through an incubator without a plentiful supply of moisture but in incubators that have no currents but little moisture is needed.

16. Do not labor under the delusion that a young chick is always dying in the shell for lack of fresh air, and that it must have as much as a young animal.

17. Do not take out the chicks until you.

believe all are hatched. Leave the chicks in the incubator. If you take them out the heat will suddenly drop, and you will also let in the cold air on the eggs. *Never disturb the eggs when chicks are hatching.*

18. Test your incubator with moisture, no moisture, plenty of air, and air shut off, as each incubator may differ from the other.

19. Eggs will be aired sufficiently when the eggs are turned. It is of no consequence to cool them, but this depends on circumstances.

20. If the chicks do not hatch out by the twenty first day your heat is too low.

21. If the chicks begin to hatch on the eighteenth day your heat is rather high.

22. Do not put eggs in at different periods during the hatch, and do not hatch ducklings and chicks together.

23. The same rules apply to the eggs of hens, ducks, turkeys, and guineas, as regards heat and moisture.

24. Never sprinkle eggs. It lowers the heat instantly, and sometimes kills the chicks in the shells.

25. If the incubator shows moisture on the glass do not open the egg drawer until it is dry. Cold air and dampness kills the chick, the heat being lowered by rapid evaporation.

26. The reason why the hen that steals her nest hatches so well is because you do not give her all sorts of eggs, such as large eggs, small eggs, and eggs from old hens and immature pullets, such as you put in your incubator.

27. Kick away the curious visitor just when your eggs are hatching.

28. Keep the incubator in a place of moderate temperature. A window on one side will make that side cooler than the other.

29. Don't expect to hatch without work. The man who expects to get chicks by trusting to the regulator to keep the heat regular does not deserve success. Work is required for other stock that need

winter care, and the artificial hen is no exception.

30. Begin with a 100-egg incubator, and learn, before you try a larger one.

31. No matter how much you *read*, *experience* will be the best teacher.

32. Have your incubator warm before you put in the eggs.

33. A child cannot manage an incubator, all claims to the contrary. Incubators are not *toys*. Don't turn over a man's work to a boy.

34. Let the bulb of the thermometer touch a fertile egg.

35. *Without Artificial Heat.*—Two weeks hence I wish to remove chicks then twenty-five days old from indoor brooder to enclosure outside. Will it be practicable without artificial heat?

It would be very risky, as most chicks at that age are still unfledged; consequently liable to be chilled of a cold night, or in a cold storm. We do not like to move out our chicks till they are about six weeks old, and it was so cold throughout the first half of May we didn't move any out till they were almost eight weeks old.

36. *Turning Eggs.*—How long can eggs be kept good for hatching? Should they be turned daily, and should they be kept in a close room?

The fresher eggs are when set the better; but they can be kept some weeks, four to six, if carefully attended to. They should be kept in an even temperature of about 45 to 50 degrees (a dry cellar is best if not too cold) and should be turned (by gentle handling) every other day.

37. *Moisture.*—If I keep a pan of water in my incubator, and wet sponges under the egg-drawer, (which has a cloth bottom) is there any need of keeping wet sponges in with the eggs?

No. The water pan alone is sufficient. Incubator managers use much less moisture than a few years ago, and are experimenting towards still less, some advocating none whatever. In our 600-egg machine, instead of putting in the four moisture pans at the start, and having

moisture all the hatch, we put in two pans only for the last week or ten days, and find it ample. Some that we know put in no moisture till the 18th day, and then only a wet sponge in each tray.

38. Sawdust, etc.—What material can I use in place of sawdust in an incubator.

Bran or chaff of any kind of grain, will answer.

39. When to Start Incubator.—How early can I start an incubator, and will I have to keep it where it won't freeze, or would it be better to let the hens set and take care of the chicks that early?

October is usually the time to begin. It should be in a place of moderate temperature. You cannot use hens that early, as they may not be broody.

40. A 400-Egg Machine.—Give dimensions for a 400 egg hot water incubator. Is it necessary to have the tank proportionately larger than a 100 egg incubator?

To estimate the capacity allow four square inches for each egg. Hence tank for 400-egg incubator should be 1600 square inches or 40x40 inches. If preferred it may be about 35x45, or of any shape desired.

41. Eggs Too Hot.—If eggs get too hot in an incubator should they be sprinkled with warm water to cool them? Are eggs roasted if the heat reaches 110 degrees?

Eggs that are too hot can be cooled by sprinkling them with warm water; but great care must be exercised, or they will be cooled too quickly by the rapid evaporation of the water. A good way to reduce the temperature of both incubator and eggs is to put from a pint to a quart of cold water into the tank, drawing off a similar quantity of hot water from the cock, and open the egg chamber door for a couple of minutes; then close it two or three minutes, and repeat. In this way the temperature of the egg chamber is reduced gradually, and the eggs don't get chilled.

42. Handling Eggs.—Does it do harm to handle the eggs, such as testing them, or changing them from one machine to another after they have been in the incubator three days?

No. Not if they are handled carefully and not exposed to cold air too long. If testing eggs in a cool room it is well to warm a couple of blankets folded to be a little larger than the egg-tray. Cover the untested eggs with one warm blanket and spread the other over another tray, and slip the eggs under as fast as tested. In this way chilling the eggs can be avoided.

43. Too Much Moisture.—Can I get too much moisture in the machine? After the eggs had been in three days I set two baking pans of water under the egg trays and sprinkled the eggs twice a day.

Yes. Especially if it is put in by sprinkling. Here is probably the cause of your failure,—the constant chilling twice a day to which you subjected the eggs no doubt killed the germs; some early, others when half grown, and others which were harder and stronger, survived nearly long enough to escape. The pans were enough for moisture!

44. Temperature for Hatching.—Will eggs hatch with a constant temperature of 100 to 102 degrees?

Yes. But the hatch will be delayed and the chicks weakened somewhat. The nearer the temperature is kept to 103 degrees, the better.

45. Hen's or Duck's Eggs.—Are the conditions the same with incubators in hatching duck eggs as with hen eggs? That is, shall I keep the same moisture and heat in the incubator for the duck eggs as for hen eggs.

The conditions are the same, only the duck eggs want but little moisture the first three weeks. The temperature required is the same.

46. No Gasoline Stoves.—Do you think a gasoline stove could be used to heat an incubator with success?

We think gasoline unsafe, and would not like to recommend its use.

47. Moisture in Brooder.—Does a brooder require any moisture, and how much?

Should have none. The brooder should be dry always.

48. Testing Thermometer.—I want to test my thermometer, can I do it correctly by placing it under a hen's wing?

Yes; but try it with several hens.

49. Unpatented Incubators.—Have I a right to build an incubator and infringe on patents if I do not offer it for sale? Can I build a hot water incubator, heat it with a lamp, and not infringe on patents? I wish to regulate it by the expansion of the water in the tank.

You cannot make a patented article even for your own use. You can make and sell any incubator that is not patented.

50. Heat at 106 Degrees.—Will it do harm to have the heat rise to 106 degrees in an incubator after the eggs have been in three days or more?

Yes. Any rise or fall of temperature from 103 degrees will do harm. The greater the variation the more harm. It kills the weaker germs and doubtless tries (weakens) the others.

51. How Much Moisture.—How often, how much, and what time should moisture be put in a two lamp incubator? Capacity, 200 eggs for chickens.

The measurement of moisture is impossible. Water evaporates more rapidly when warm than when cold. Everything depends on how much air flows in, the temperature, stage of incubation, cubic inches of space in incubator, etc. No one can know how much moisture to give. It can only be determined by observation during the hatch.

52. Ruffled Feathers.—What is the cause of incubator chicks being ruffled in feathers? Some act as if bemuddled, stretch out their necks, and lay down.

May be due to several causes—bottom heat, lice, dampness or insufficient heat in brooder.

53. Cellar for an Incubator.—Will a damp cellar do for an incubator?

Yes, it will be an excellent place. In a damp cellar you will not need any moisture pans in the machine, as the natural moisture of the cellar air will be sufficient.

54. Sponges, etc.—Which method do you suggest for applying extra moisture in an incubator. What do you believe to be the best material to use for bottoms of egg trays?

Place extra sponges, dipped in hot water, here and there in the drawer. Mosquito wire netting.

55. Hen's Eggs and Goose Eggs.—Will it do to put goose eggs and hen's eggs in an incubator at the same time together?

We do not think the results will be satisfactory.

56. No Test for Fertility.—Do you know of any egg tester by which you can tell a fertilized egg before putting in the incubator

There is no way of knowing if an egg is fertile before being used for incubation.

57. How Hot or Cold.—Please inform me how hot or cold it must be in the incubator to spoil the eggs?

Lower than 40 is injurious, and 116 for an hour will spoil them. These are extremes.

58. Brooder House.—How many chicks would a brooder house 50 feet long and 12 feet wide accommodate? Could I heat it with a stove?

Five hundred if it was divided into 10 apartments of 5 feet by 8, leaving a 3 feet walk on the north side. That would give you ten hovers which would accommodate 50 chicks each. You would want a stove with a water-jacket and outflow and return pipes for the hot water. A simple stove will not answer. You want the heat where it will keep the chicks warm, and hot water pipes are the thing.

59. When to Turn Eggs.—How about turning eggs once over daily, or half over twice a day?

They should be turned *half over* only, to bring the cool side up to the heat, and we think it wiser to turn twice a day. One incubator maker advises turning three times a day, but we are satisfied that twice a day is sufficient with ours.

60. Chicks Dead in Shell.—I am using an incubator and have had very good success until recently. Now I find many full grown chicks dead in the shell. What is the cause?

Too much heat, probably, although it is not certain that it is the fault of the incubator; the same thing happens sometimes with hens. It may be the fault of

the hens laying too rich (fat) an egg, and the chick growing too large for the shell, and cannot turn himself to break his way out. This is liable to happen where fowls are lazy, and have little exercise.

61. Chicks in Brooder.—How long should chickens be kept in the brooder before they can do without artificial heat?

Until about six weeks old, but it depends on the season and weather.

62. Lime in Brooder House.—Will air-slaked lime, used freely in my brooder house, injure the chicks?

No: it will do no harm. Dust it freely over every part.

63. Sand on Floors.—In brooder houses with board floors do you consider it best to put sand on the floors, or not?

It is better to use sand.

64. Size of Brooder House.—What should be the size of a house in which to raise 75 to 100 chicks to three pounds? and will a house built of rough boards, and covered with good roofing, be warm enough?

A house 10x12, divided into 2 pens, 6x10, will do very well. A brooder will comfortably accommodate 50 to 60 chicks till six weeks old, at which age they should be graduated from the brooder to a house not freezing cold, but comfortable enough. A well built house, covered with a good roofing, will do nicely.



CHAPTER V.

POULTRY BUILDINGS.

1. Chief Requirements.—Being about to erect a poultry house, what are some of the chief requirements to be observed?

For economy's sake, the walls should not be carried up too high from the ground. The inside of a fowl house need not be over seven or eight feet high at the eaves, on either side, with a "one third pitch" above this for the roof. If the building has only a "shed" roof, or one slant of covering, the back wall may be three to five feet high, and the front seven or eight feet from the sills. In all cases look well to the means of having the building thoroughly ventilated, when desired. An opening in the ridge for this purpose, or one at both sides of the house under the eaves, is best. Have a screen, trap-door or slide, inside, that may be raised or shut at will, conveniently. Nothing is more surely conducive to good health in your poultry, continuously, than affording them pure air to breathe. In confined premises, where there is no opportunity for the rapidly accumulating foul air within to escape, chickens or adult birds cannot thrive. The breathing over and over of this impure atmosphere generates disease inevitably; and the careless or inexperienced breeder discovers "roup," "sniffles," "swelled head," "pip," and a score of other so-called fowl diseases among his stock, most of which are fairly chargeable for their origin to this neglect regarding

proper ventilation. Fresh air, clean water, varied food, and all the range you can give the birds in good weather, are chief requirements toward their health and thrift. Of these, pure breathing air may be counted as among the very first important requisites.

2. Room in Winter.—How much floor space should 20 fowls have for a winter house?

A house 10x10 feet should accommodate 20 hens in the winter season without crowding, as they can, at this season, be together with less inconvenience, but the fact is that the more room the better. It is not how much room on the roost is required, but how much room on the floor should be given, as that is where the hens are to work and scratch. If the hens have access to a covered shed in which to exercise during the day it will not matter, on cold nights, if 30 hens be allowed to roost in a house 10x10 feet, for they will get more fresh air than can be kept out, in the winter season. The rule of ten is a good one for calculating the space required which is, in summer, to allow 10 hens in a house 10x10 feet, and allow them a yard 10x100 feet. In winter one-half that space will answer.

3. House for Four Breeds.—Will you give directions for arranging a house for four different breeds? I do not want the building to be over 12x16 and it is to hold 20 of each breed.

The size of the building that you name is not more than half large enough for the number of birds that you wish to put in it. To have it convenient you should take a hall 3 feet wide off the north side, putting up a nice net partition so that the birds can be seen and fed and watered from the hall. This will leave you a room 9x16 feet which should be divided into two rooms each 8x9 feet and each should have a sash—an ordinary house window in the south side, and 10 or 12 fowls is plenty for each room.

4. Chaff, Straw, etc.—I wish to put something on the floor of my hen house to throw feed on, in order to make the hens scratch for it. If chaff cannot be had will not shavings answer, having them three inches thick on the floor?

Yes, if broken fine; or you may use cut straw, which comes in bales.

5. Partitions.—Before I build my poultry house and yards, I would like to know, if I would have much trouble with my fowls fighting, if I should make the lower part of the partitions of wire netting?

Have the bottom of boards, two feet high, as they will pick each other through wire.

6. Ventilation.—What is the best mode of ventilation?

The proper way to ventilate is to run a shaft 4x6 inches inside from within 4 inches of the floor up through the roof and to a height of 2 feet above the highest point of the roof, putting on a cap to exclude rain and snow, and leave side openings for a draught.

7. Earth Floors.—What do you think about earth floors in poultry house?

Many prefer them. Use the most mel-low soil you can procure. Loam is better than sand; the drier it is the better. If the air in your hennery is full of dust arising from the hens scratching and wallowing, then you may know that the premises are thoroughly disinfected. Especially is it beneficial to have an ample quantity of dry earth under the perches. The dust from fine, dry loam which settles upon the

nest boxes, perches and every part of the woodwork tends to keep off vermin, so that in some cases no whitewashing is necessary. Be sure by all means that the bed of earth which forms the floor is higher than the ground surrounding the building, so that the surface water when there are thaws and rains will not run into the building. As an additional precaution, surround the building with a shallow ditch communicating, if possible, with lower ground in the vicinity.

8. A Stone Walled House.—What would you think of building the walls of a poultry house of stone and mortar? I intend to build a house 15x100 feet, and as I am a stone mason by trade I can build it of stone for about half what the lumber would cost me.

Stone walls laid up in mortar and cement would make an excellent house, only that care should be taken to build it in mid-summer so that it would get thoroughly dry before frosts come. It would be greatly improved by fastening strips of furring to the inside, about three feet apart and then ceiling up. This would give an inch dead-air space to keep out dampness and frost, and make it much warmer.

9. Small House.—In a house 9x11 feet can I keep twelve chickens (eleven hens and cock). Would that be too many hens to one cock to get fertile eggs?

Yes, you can keep them in that size house. There would not be too many hens.

10. House and Yard.—How large a poultry house should I have to accommodate twenty-five laying hens? Would a yard 2 rods wide and 10 rods long do for that many hens? Would it keep them in grass if it was in an orchard? How high a netting fence should I have for pure Leghorns, or for a cross of Leghorn on Plymouth Rocks?

That number would do very well in a house 12x15 feet, and 6 feet high to eaves, but better in a house 12x20, divided into two pens 10x12, with yard divided in halves also. The size yard mentioned would be a liberal yard, and should keep in grass all the growing season. All the better if it is an orchard. A fence should be 6 feet for either kind; although with a

liberal yard they are less likely to fly than if shut in a small yard.

11. Cement Floor. Is cement floor good for poultry? If not, why?

It is, but not as good as boards, as it is sometimes damp owing to condensation of moisture.

12. A 10x10 House.—How many Leghorn chickens should be put in a house 10x40 feet? Would flocks be more likely to trouble with lath nailed to cross strips inside of house, and straw crowded behind them to make house warmer?

About 45. Lice would be likely to harbor in the straw.

13. Leg Weakness from Board floors.—Will keeping old chickens on board floors cause leg weakness if they have proper food? Can young chicks be raised to market age in a room with board floor?

It will not cause leg weakness. Chicks may be so raised but you should have a covering at night over them.

14. Heating a Poultry House.—What kind of heating apparatus would be best to heat a poultry house 32 feet long by 20 wide, half in centre, cemented cellar 6 feet deep?

Not any. It is very risky heating a poultry house, because of the certainty of overheating it,—keeping the temperature too high, and enfeebling the birds thereby. Fowls are clothed for cold weather, just as you are when you have on your winter clothing and an overcoat. In your office, presumably warmed to 70 degrees, you take off your overcoat and hat; biddy can't do that. She has to stay in that high temperature with her feathers on, and the effect upon her would be just the same as upon you if you worked in your office with your overcoat on and buttoned up. You would get over-heated, and when you went out into the cold you would catch cold. Keep the hen house tight and warm, and you need no artificial heat: if there are cracks and drafts, all the artificial heat in the world won't help you.

15. Ventilating a Cellar.—I have a cellar, 13 feet wide and 22 feet long, two windows at west end and one window at east end, with

double doors. I want to keep 30 Leghorns in it this winter. How am I to ventilate it?

Do not ventilate at all in winter except to leave the doors open during the day. At night the house should be closed, no openings at all. It will be harder to keep out the cold air than you may wish.

16. Board Floor or Earth.—Which is better for the floor of a hen house, the ground, or a plank floor?

Much depends upon the situation of the house. If the location is damp a board (plank) floor is imperatively necessary, as dampness *must be* avoided at all cost. If the location is dry, sloping so it is naturally drained, the ground is probably better; it is Nature's way, and it is much cheaper.

17. Overcrowded. All of my fowls have the roup and are not laying enough to pay for the food they eat. I have 400 in a house 28x32 feet, 6 feet high. It is divided into four pens 10x20, each pen for 100 fowls.

A man who puts 400 birds into space only large enough to comfortably house 100, is bound to have roup and kindred diseases. Overcrowding is paying a premium for diseases. If you will dispose of three-fourths of your stock, you will stand a chance of getting some eggs, but no one can get eggs under such circumstances as you detail.

18. Stove in House.—Do I need a stove in a wind-proof house to have chickens in good health and in laying condition, and for raising young chicks where I have brooders?

It is probably better not to have a stove (or artificial heat) in a house occupied by laying stock; they will keep in better health without. It is wiser to raise the chicks in another house; or separate off a pen for them, keeping it warm.

19. Various Questions.—1. How large a house for 100 hens? 2. Should laying room be partitioned off from roosting room? 3. 150 chickens in a house 10 feet high—are they too crowded? 4. How many roosters to 100 hens?

For permanent quarters, full grown fowls require five square feet of ground room per head. Thus 100 hens would need a house 10x50 feet—height is not so

important. 2. Not necessarily. 3. Yes, or very soon will be, if they grow any. 4. If for breeding, use one to each flock always. If for eggs only, and all in one flock, keep but one male—two roosters in any flock is one too many.

20. Pen for Leghorns.—How many Leghorns can be kept in a house 8x12 with yard 21x48?

Divide into two apartments, each 6x8, and put a cock and 12 hens in each.

21. South or South East.—In which direction should a poultry house face, to get the early sun's warmth? Some say south and some say southeast?

The southeast direction is proper if the warmth is desired very early, but there will be less warmth from the sun in the afternoon. We would advise the southeast direction for the reason that the morning is the time the warmth is most needed.

22. Tarred Paper.—If a poultry house is lined with tarred paper, will that keep the lice away as well as if the inside was whitewashed?

Tarred paper and whitewash only prevent lice for a while. Kerosene is the best agent to prevent lice.

23. Houses and Yards for 1000 Fowls.—On our farm we have a nice piece of land 400 feet wide by 200 feet deep. We have built 10 double houses, 12x24 feet, divided into two pens, 12x12 feet each, with runs for each pen 20x200 feet. We wish to keep 1000 chickens. Can we put 50 in each half-house (12x12) with run 20x20; or would they be overcrowded?

Fifty fowls could be kept in half-houses of that size, but they would be terribly crowded, multiplying the liability to disease, etc., not to mention the disadvantage of some in each pen being crowded away from the food, and so kept at no profit. You will do much better to build another lot of houses, set them 100 feet from the others, divide your land into 40 runs 20x100, and having 40 half-houses. You would make very much more proportionately, and, even then, we think you would do better (make more proportionately) with 20 in a half-house and run than with 25, with the advantage of saving 20 per cent. of the food.

24. Poultry Netting, etc.—How long will poultry netting last—19 mesh? Are good emlock pickets as cheap? How high should fence be to confine Leghorns?

Ten years or more. Not if length of time of wear is considered. About 6 feet—higher will do no harm.

25. About Glass.—I want to put a hen house 15x16 feet square and eight feet high, with glass on the east and south sides, all the way from the floor to the top. How will that do for 40 hens this winter?

It is excellent, but do not use too much glass, as it keeps off the warmth at night.

26. Winter Ventilation.—Is it necessary to ventilate in winter?

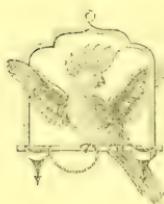
Ventilators to poultry houses have done more damage to poultry in winter than anything else. If the air of the poultry house in winter is foul, some excuse may be made for the ventilator, but the severe cold seals up all sources of odor, and in a short time turns all liquids to solids. The poultry house can be amply purified and ventilated by leaving the doors and windows open during the day and using dry dirt on the roost board and floor as an absorbent, but the ventilator at the top of the poultry house should never be left open after cold weather sets in. Let your object in winter be to secure warmth first. Ventilation will take care of itself, and you will have more difficulty keeping the cold air out than to let it in.

27-43.

Additional Questions.—Is it positively necessary to have sunlight in poultry houses? (We should say, yes).—Should buildings always be ventilated? (Yes).—Do you favor building near pig pens? (We do not).—Should buildings be on a foundation above ground? (Yes, otherwise the surface water in heavy showers may make the floors wet and damp).—Should perches be movable? (By all means).—What style roof is most economical? (One with only one side which extends to the ground).—Is wire preferable to lath for

partitions? (We think so).—Is a hall or passage way a necessity? (It is decidedly preferable).—Is a two-story building advantageous? (Yes; the roof costs no more and the upper story can be used for sitting hens and other purposes).—What ought a good house for 60 or 80 fowls cost? (A good house with four pens can be built for \$100 and perhaps less).—How much room should a dozen fowls have? (About 12 feet square).—What is a good cheap style of roof? (Roof boards of hemlock or spruce, covered with tarred paper and then

shingled).—Where should the roosts be located? (Out of the line of draughts).—What size should the roosting pole be? (A 2x3 inch scantling slightly rounded at top is good).—Are high roosts advisable? (Decidedly not).—What should be the size of ventilators? (About 5 inches square inside measure and run below roost platforms).—Should board floors be laid on or very near the ground? (They should be at least one foot above ground).—What makes a good lining for a poultry house? (Tarred paper).



CHAPTER VI.

MISCELLANEOUS QUERIES.

1. Shipping Coops.—How many inches wide, long and high should a shipping coop be for one or two fowls?

That depends upon the size of the fowls. We intend to give about a square foot of floor space to each, where we are shipping a number. For instance, a coop 2 feet wide by 3 long, contains six square feet, and will do very well for six fowls such as P. Rocks or Wyandottes; would carry eight or ten Leghorns or Hamburgs; or four or five Cochins or Brahmans. For height:—they should be high enough to allow the birds to stand erect without touching the top. Many breeders make a mistake in this and ship birds, especially cockerels, in coops too low.

2. Cross-questioning.—What breed should be crossed on White Leghorn hens to produce a good laying fowl? Would B. P. Rocks do? What color would the cross be, and would they be non-sitters?

B. P. Rock males would be too heavy to cross on White Leghorn hens; the cross should be light-weight male on heavier female. Think you would find some difficulty in *crossing up* a small variety like the White Leghorns from the female side. The color would probably be mixed, and they would be sitters, the crossing of two non-sitting varieties will produce sitters, the act of crossing seeming to develop that instinct, presumably latent until stimulated into activity by the cross-breeding.

3. Hatching Bantams.—When should Bantams be hatched?

August should be the latest month; July is a good limit to place; still, there is no great objection to delaying till August, if you are a careful manager. A secret in the breeding of this variety of birds is to keep them down in size. If got out early in the season, they grow finely all summer, and are usually some ounces heavier at maturity, of either sex, than if bred in cold weather.

4. Egg Tester.—How can I make a good egg tester?

To make an egg tester to use with a common lamp, take pasteboard box about seven inches long and six inches wide and six inches deep. Cut a hole in the bottom big enough to fit the large part of a lamp chimney through. Next cut a hole about the shape of an egg, but rather smaller, in one end so that it will be opposite to the lamp flame when the tester is slipped over the chimney. Now cover the box outside with any dull, black cloth, so that no light can get through, and you are ready for business. Light the lamp, place the tester in position, and the egg over the oval opening in the side. Turn gently as you look, and its condition will be clearly exposed to view.

5. A Durable Whitewash.—Will you give a recipe for a durable whitewash?

One-half bushel of good lime, five pounds rock salt, dissolve; one-half pound whiting, four pounds ground rice, boiled to a thin paste; one-half pound clean grease. Slake the lime in a tight box or barrel with hot water, keeping the box covered that the steam may not escape. Slake to the consistency of thick cream. Thin it when used, so that it will flow freely from the brush. If put on too thick it will flake off more or less when dry. The above is for outside work. For indoors slake the lime as above with hot water, omitting the salt, grease and rice. Instead of thinning the creamy solution with water use skim milk.

6. Mating Dark and Light.—Which is best to mate, dark roosters and light hens, or light roosters and dark hens, both for looks and profit, Plymouth Rock hens.

The light males and medium dark hens are usually preferred.

7. White on Minoreas.—Do Black Minors have any white on them?

When very young some of the down is white. Adult fowls occasionally have a little white on the plumage.

8. Broilers.—Will you please inform us the suitable amount of room it requires to raise one hundred broilers, in the winter?

At Hammonton, N. J., one hundred broilers are raised on a space 5x8 feet.

9. Plymouth Rocks.—What fowls were crossed to produce the Plymouth Rock?

There were several crosses. It is supposed the result came from uniting the Cochin, Java, and Dominique.

10. Good Hatch.—What is considered a good hatch from 13 eggs?

One more than half—hence seven chicks are considered a good hatch from 13 eggs.

11. Ridge on Egg Shells.—Will you please tell me what causes a ridge around an egg shell?

It is due to hen being out of condition in some manner, usually overfat.

12. Fall Moultting.—Do fowls moult in the fall, or is it due to lice that my fowls are moulted now?

Hens moult usually from August to November, but some moult at different periods of the year.

13. Capons.—How should capons be fed in the winter months? Do they need outside yards? How many can be kept in a building 15x30 feet? How much room will I need to winter 200?

Simply keep them growing. Feed on any food they will eat, but do not get them too fat until near time of selling. A very small yard will answer—just enough to allow of some out door air and exercise. About 100 can be kept in that size building, but they may be crowded more if building is kept clean and weather cold. It is usual to allow four square feet for each bird, or 800 square feet for 200.

14. Pulling the Primaries.—I have some Leghorns that fly over the fence, and if I pull the primary feathers out of their wings will they grow in again all right?

If pulled they begin to grow at once. If cut they do not renew until bird moults.

15. Highest Egg Record.—Please give me the highest record of a hen laying eggs in one year.

In England 280 is claimed, but we have no records, and cannot state. Be satisfied with 150.

16. About the Polish.—Does a pure White crested Black Polish get white feathers through the body when it gets to be two or three years old?

The color should be black, with no white through the body; but it often happens that aged birds show white feathers, as the tendency is to grow lighter with age.

17. Good Whitewash.—Please state how to mix a good whitewash?

Use 1 lb. flour paste, and one-fourth lb. glue to four gallons skim milk, then slake lime with it.

18. Leghorn Combs.—How many points must any variety of Leghorn hens have on their combs, provided there are no side sprigs, or is it immaterial?

Five or six—five preferred, for White Leghorns. We presume the same for the Browns, but the standard does not specify number.

19. White Minorcæ.—Will you please give the origin of the White Minorcæ?

They are of Spanish origin, coming first from the island of Minorca, from which they derive the name.

20. Bolton Grays.—Will you please say if there is such a fowl as Bolton Grays.

The old Bolton Grays have now become the Silver Penciled and Silver Spangled Hamburgs.

21. Fattening Cockerels.—How do you fatten cockerels from late hatch, Plymouth Rock, I have a lot of them.

Feed on plenty of corn, with soft food three times a day.

22. A Good Cross.—What do you think of crossing Plymouth Rock with Game, and are they as good as the pure bred Plymouth Rocks?

The cross of Indian Game and Plymouth Rock will produce a grand table fowl, and cannot be surpassed.

23. The Standard.—What is the book called the "Standard?"

It is a volume prepared by a society of poultrymen known as "The American Poultry Association." Its title is "*The American Standard of Perfection*." It is not a treatise on poultry culture, but merely describes, point by point, each recognized variety of fowls.

24. Bone.—I am a new beginner and want to ask if burnt bone is as good as raw bone?

No. Burning the bone changes an animal food into a species of lime. Burnt bone is good, but a great part of the virtue has been destroyed in the burning, especially the animal matter.

25. Egg Shells for Fowls.—Are egg shells good for fowls in winter?

Yes, egg shells are excellent for fowls at any time, but should be smashed fine so as to be readily eaten. Otherwise they may teach the fowls to eat their eggs. All of the shells of the eggs eaten in our family are crushed fine and mixed into the mash for the fowls' morning feed. As some of the albumen clings to the inside of the shells, it

would be wasted if the shells were burned or thrown upon the manure heap; by my method this albumen, as well as the shell material of the shells, goes back to the fowl's system to help make more eggs and shells.

26. Eating Pumpkin Seeds.—How do you account for fowls eating pumpkin seeds, getting giddy or drunk, and ultimately dying in that condition?

It is not due to the seeds so much as overfeeding, the birds being fat, and subject to pressure of blood on the brain, causing apoplexy.

27. Mumber Males.—Will one do with 25 pullets. Is good wheat at \$1.00, cheap feed? Is clover hay cheap feed at \$14.00 a ton? How much wheat will 25 hens need at a meal?

It is now claimed that one male with 30 hens is better than if with a smaller number. Wheat is not cheap if we consider the nitrogenous and mineral matter, but cheap as a heat-forming food. Clover is cheap feed at that price. About a pint once a day, with clover for 25 hens.

28. Excrement on Chicks.—What is the cause of the exrement of incubator-hatched chicks hanging on their posteriors and hardening there?

Looseness of the bowels is the cause, but it isn't confined to incubator chicks. We have some hen hatched chicks slightly troubled that way. It hardens because the heat of the body dries it. It must be removed, else it will cause stoppage of the vent, and kill the chicks. The cause is variously, too sloppy food, uncooked (raw) meal-dough, a chill, etc. A remedy is to give dry food mostly, putting a little cayenne pepper in the moistened food, and scalded milk to drink.

29. Broilers or Eggs.—Do you think there is profit in raising broilers (with hens,) or is there more money made in selling the eggs?

The egg is worth but one or two cents; the broiler-chick, when he weighs a pound and a half, is worth twenty to fifty cents; the increase is food and labor. The disadvantage of raising early broilers by hens

is that the hens will wean the chicks when they are four or five weeks old, and they may then be chilled and stunted. It is far better to have a brooder (or brooders) to put the chicks in after the hens have hatched them, then the hens can be reset.

30. Broody Hen.—What is the best method of breaking up broody hens?

Shut them in a pen by themselves, away from nests, two or three days. If you have a spare cock, or lively young cockerel, put him in with them.

31. Toasted Corn.—I am feeding whole corn toasted, every other night; will that make hens lay?

Yes, provided you feed a variety of food also. Be careful, also, not to get the hens too fat. That's the great danger with corn.

32. Laying after Moulting.—What time do hens generally begin laying after moulting?

That depends upon how they have been fed previously. If fed for eggs, they will take but a short recess for moulting, sometimes none at all. If the system is exhausted, the moult (producing a new suit of clothes) is a heavy drain upon a hen, and she may not get built up to laying vigor again before spring.

33. Buy or Raise.—Isn't it cheaper and better for one lacking somewhat in room, to buy pullets at ten cents a pound for laying stock than to raise them?

No, a thousand times no! The pullets you buy at ten cents a pound haven't been fed for growth, and won't lay before spring, not to mention the swarms of lice you buy with them, which will still further handicap you. If you want pullets to lay while eggs are bringing high prices, hatch them in April, keep them growing from the first day so they will lay November 1st, and then keep them laying. You can never buy that bird!

34. Excellent Cross.—Please tell me what you think of a cross between the White Leghorn and Light Brahma? What would be the advantages of such a cross, and should I use a Leghorn cockerel on Brahma hens, or vice versa?

The cross produces a bird larger than the Leghorn, and more active than the Brahma, the Leghorn, predominating. Use the Leghorn male. The cross is an excellent one.

35. Chicks from Small Eggs.—Will birds hatched from the small eggs be as large as those from the large ones produced by another hen?

Yes, as small eggs do not mean that a hen will not lay them larger, but it is safer to breed from hens that lay large eggs uniformly.

36. Lime, Gravel, Oyster Shells.—Is lime and gravel as good as oyster shells?

Old plaster, broken muscle shells, and many other things are good to furnish lime material to fowls. Oyster shells are excellent, and so common and cheap, they are almost universally used. They can be obtained of dealers in poultry supplies everywhere. The price in Boston is sixty cents a hundred, and they are sold at retail as high as two cents a pound.

37. Forcing.—Please explain the process of forcing as applied to raising chickens.

It means simply to feed heavily and force them to grow.

38. Brown or White Leghorns.—What is the difference aside from color?

	Browns.	Whites.
Weight of egg	190.	140.
Food per day	20z 398g.	20z. 99g.
Meat 6 mo. old	4oz 336g.	4oz 385g.
Bone 6 mo. old	3lb 15oz 233g.	3lb. 15 oz 223g.
Wt. when hatched	2lb 10 oz 140g.	2lb. 10 oz 140g.
Gain per day; at first	1 oz 102g.	1 oz 72g.
	107g.	92g.

The Browns are said to develop faster than the Whites. In many places the Whites produce considerably more than 140 eggs per annum, and in this point the above scarcely does that variety justice, as also in the weight of the eggs.

39. Pullets for Broilers.—Would you recommend me to get last year's hens, or pullets of this year, to hatch broilers, and for winter laying.

Pullets (or a male) hatched not later

than April, would probably answer, but we think stock over one year old is better.

40. Origin of Leghorns.—Where did the Leghorns come from originally, and which is the original stock, the Whites or Browns?

They came from Leghorn, Italy, and as both Browns and Whites were imported from there, between 1850 and 1860, it is impossible to tell which is the original stock.

41. Alfalfa.—Is alfalfa a good substitute for clover as a winter food?

Yes. Herd's grass is also good. Of course they are not so good as clover, but better than nothing.

42. Best Chick Food.—Let me know what to feed to young chicks of the breeds that feather fast, to prevent drooping of wings and in many instances dying. Also at what age to cut combs of cockerels of Game Bantams?

The best food is bread and milk, with meat twice a week, and a variety of food. Cut the combs as soon as they show well, —when they are about three or four months old.

43. Profit in Bantams.—Do you consider the raising of Bantams at all profitable? Are their eggs salable?

Being small, the eggs are not always salable, but in proportion to cost of keep, (and size or eggs in proportion to size of fowl), they are more profitable for home use than any other breed.

44. Fine Table Bird.—What kind of stock would result from a cross of B. B. R. Game cock and Brown Leghorn hen?

The cross makes a fine table bird, and the hens grand layers. They will strongly resemble both parents.

45. Carbolic Acid.—Is carbolic acid good in the water for chickens; if so, how much to the gallon?

Carbolic acid is good for some purposes, but should not use it regularly, and then but a few drops to the gallon of water. Sulphur is good, also, in its' place, but use sparingly, as it opens the pores of the skin, and makes the birds liable to colds.

46. The Dunghills.—What is the average number of eggs laid by a dunghill fowl in a year, with reasonably good care and feed?

The average dunghill fowl doesn't get reasonably good care and feed, consequently doesn't average, probably over fifty eggs in a year. Good grades, got by crossing Brown Leghorn cock on Plymouth Rock hens, have laid, with us, 175 eggs apiece in a year; but then, they were good stock, and fed for eggs. The average yield of eggs per fowl in the United States is a little below 100.

47. Danger of Mixing.—Would there be danger of mixing the breeds if I let B. B. Game Bantams run with hens as large as P. Rocks?

Most certainly. Bantam males have a great deal of gimp, and will serve the large breeds of fowls successfully. Your Bantam females would be all right and would breed true, but P. Rocks would be mixed.

48. Fit for Breeding.—At what age is a healthy Leghorn cockerel fit for breeding purposes?

A Leghorn cockerel matures early. He is serviceable when six months old.

49. Three Classes.—According to utility, how should the various breeds be classified?

The utility of the breeds can be divided up into three classes, as follows: First. For egg farming—Leghorns, Minorcas, Andalusians, Anconas, Spanish, etc. Second. For table birds, (roasted)—Brahmas, Cochins, Games, etc. For broilers, crosses of lighter breeds on the above. Third. For general purposes—Plymouth Rocks, Wyandottes, Houdans, Langshans, etc. For profit, a man can secure better returns by selecting according to the class in which he is interested. For instance, an egg farm would be a very slow concern run with birds from class second. Likewise a meat supply could not be secured by class first. And where both are intended, and only a limited supply of each expected, class three will fill the bill.

50. Age of Fowls.—Is there any way to tell the difference in the age of a one year old hen and a two year old hen?

The hen has a more fully developed body, the legs are rougher, and some of them have spurs quite long. The older the hen the more likely the comb and wattles are rough or injured, while the general plumage is not as clear and bright as that of a younger hen, nor are the elder hens as active or sprightly.

51. Plaster and Manure.—Which is the best way to save poultry manure? Will it pay to buy land plaster to put under the roosts? I have board platforms under the roosts and scatter lime and dust, clean every few days and pack in barrels. Will it do to keep the barrels out of doors well covered with boards?

Plaster is excellent and cheap. Omit the lime, as it causes loss of ammonia. Otherwise your method is correct. The manure should be kept dry, but the boards will answer if they do not admit moisture.

52. Golden Wyandottes.—Which is right in Golden Wyandottes? I have hens yellow with black spots on, and black hens with yellow spots.

The web of the feather should be black with yellow centres, but the hens vary very much in all flocks.

53. Whitewash, etc.—Please tell me the way to mix whitewash with kerosene oil.

It can be mixed in any quantity. Add a quart of kerosene to a bucket of whitewash, stirring well while adding the kerosene.

54. A Good Tonic.—Will you give a recipe for making a good tonic?

A practical poultry breeder informs the *Poultry Keeper* that he has repeatedly saved chicks and adult fowls, even after they were apparently beyond all hope, by administering a spoonful of a solution of what he thinks one of the best tonics known: For a chick take five drops brandy, two drops tincture iron, and put in as much quinine as will rest on the point of a small knife blade, or we would suggest from one-half to a grain. For bowel diseases add two drops laudanum, or what is better, one-fourth of a teaspoonful of paregoric,

doubling the dose for adults and lessening it for very small chicks. For colds, roup and such like, take one-half grain quinine, one grain red pepper, one of assafoetida, half grain opium, and three drops tincture of iron. One hour after give half teaspoonful of castor oil, doubling the dose for adults. Should the chicks appear weak and droopy, with bowel discharges, put a pinch of quinine and a little tincture of iron in the drinking water. For a quick, active stimulant, when the chick is very feeble, take a drop of laudanum, a little red pepper, and two or three drops of brandy. Be careful to add a little water always, for fear of strangling the chick.

55. Crossing for Eggs.—I have Single Comb Brown Leghorn hens, and would like to cross them to improve their egg production and size. How do you think it would do to use a Silver Spangled Hamburg or Black Minorca cock? Can you name any other cross that would be better for eggs only?

Crossing Brown Leghorns with either a Hamburg or Minorca cock would not increase the size, but would increase the egg production, as crossing one variety with another seems to stimulate the reproductive organs, and thereby induce egg-laying. Probably there is no better cross possible for eggs. Of the two we should use the Black Minorca, as it is a single combed variety.

56. Never Crowed.—I have two Wyandotte cockerels. They are over five months old and have never crowed. They are healthy, vigorous birds. What is the matter with them? Will they do to breed from?

They are only slow in maturing, and will probably be of large size. They will crow soon enough, and can be used for breeding purposes.

57. Partridge Cochins.—Will you please give me a description of Partridge Cochins. What should be the color of the plumage, earlobes, legs, and should the leg and middle toe be covered with feathers in order to be full blood?

Head red, comb single, earlobes red, neck red with black stripe down middle of feather, back same, breast black, tail black, legs yellow and feathered on out-

side to end of outer toe—middle toe feathered.

58. Every Day Layers.—What breed of hens will lay every day. Some think that Brahma crossed with Plymouth Rocks will lay every day, and chickens come early also.

There is no breed of fowls that will lay every day. If one gets them to lay 200 eggs apiece in a year he does exceedingly well, and that is only an average of a little more than half an egg a day. The Leghorns and Minorcas are the greatest layers, and would be good for warm climate. Brahma crossed by Plymouth Rocks would be good layers, greater than either of those two breeds pure-bred, but not quite equal to the Leghorns or Minorcas.

59. Best for Capons.—What breed, or what cross, makes the best capons?

In Mr. Dow's comprehensive little book on "Capons and Caponizing," we find "Any breed of cockerels can be greatly increased in weight by being caponized. The larger breeds, of course, make much larger capons than the smaller ones, but the latter are increased in weight in proportion to their natural size.—All things considered, the Plymouth Rock is the best breed to keep for caponizing, eggs, and everything although the Light Brahma are about as good. A cross of the two would be better for capons alone. Some claim that the largest capons are obtained by crossing a Dorking cock on Brahma or Cochin hens. After doing this I should re-cross with a Plymouth Rock to get a full-breasted fowl with yellow skin and legs, and particularly a handsome plumage. The matter of plumage is an important one for capons for market, as much of it is allowed to remain on when dressed, and it adds greatly to the appearance of the bird."

60. Corn not Cheapest.—Corn is one cent a pound, oats a cent and a half, and wheat two cents; which shall I feed my growing chicks? Corn is the cheapest.

Because corn is thirty-three per cent. cheaper than oats, and fifty per cent.

cheaper than wheat, it by no means follows that is the cheapest to feed, because here it must be measured by its ability to produce. One thing is certain, the elements must be in the grain in order to produce the same in the animal tissues. A strictly carbonaceous food would not build up the albuminoids. Hence corn is more expensive in growing chicks than oats or wheat. It may form a portion of the daily diet, say perhaps twenty per cent, but not more, for beyond this it is not profitable. Oats whole and ground, wheat, cooked vegetables, an abundance of clover, and a small quantity of corn, should form the rations fed to growing chicks, and the quantity given must be in proportion to the needs of the creature. If a larger amount of corn or corn meal is fed, there is great danger of disturbances with the bowels. Its heating nature is apt to produce an inflamed condition of the lining membrane of the intestines.

61. Blood on Eggs.—I have a hen which some time ago laid eggs that had several small clots of blood in the white. Since then she layed one of which the entire white had a bloody tinge, and a few days ago one was found to be all blood except the yolk, at least it was the color of blood.

The blood clots are often caused by food, as raw meat, but in a majority of cases it is due not only to derangement of the digestive organs, but to weakness in the reproductive organs, the substance of the eggs being deposited as blood instead of the blood being converted into albumen, etc., as is the case when cows give bloody milk.

62. Crude Carbolic Acid.—I wish to inquire about carbolic acid. I suppose it can be bought in powder, in crystals and in solution. Which is the best way to buy it? How should the powder or crystals be dissolved? What proportion of water? I want to use it about the henmery. One tablespoonful of carbolic acid to a quart of slackened lime. Does this mean the acid in powder or solution? About how much should I pay for it by the pound?

It is sold in all conditions, crystallized and crude. Also as a solution. The crude

acid is the kind used. The liquid is of varying strength. An ounce of the crude dissolved in a pint of water answers for ordinary purposes. A tablespoonful of a solution of carbolic acid to a quart of lime will make the carbonate of lime. The crystallized is \$1.00 per pound, the liquid saturated solution) is 60 cents per pound. Crude from 20 to 40 cents.

63. Value of Kerosene.—Give us your estimate on the value of kerosene in the poultry yard.

The many uses that kerosene may be put to in the poultry yard make it an almost indispensable article. For painting the inside of nest boxes for sitting hens there is nothing equal to it, as it surely kills all vermin with which it comes in contact, and prevents other vermin from entering the nest until it is entirely evaporated, which, if the crude oil is used, will give the hen ample time to hatch her brood. A few drops in the drinking water occasionally has a good effect upon the general health of the flock, and for colds or roup there is nothing better if carefully applied.

64. Shipping Broilers.—Please give the best way to prepare and ship broilers to New York in winter and summer? Distance 1000 miles.

Simply dry pick them, removing only the feathers, pack in barrels, and send by express. In summer it is best not to ship so far.

65. Cutting the Wings.—I want to know if it will injure fowls to cut their wings, as my fences are too low for Leghorns?

It will not injure them to cut the wings except in appearance.

66. Origin of W. P. Rocks.—I would like to know where the White Plymouth Rocks come from?

They are said to have "spotted" from the barred Plymouth Rock.

67. Dubbing.—Will you explain the operation of "dubbing?"

The operation of dubbing is easily performed. The right age is when the chicks are from ten to twelve weeks old, or when the comb has made a good start to grow out.

A sharp pair of shears is the best instrument to use; trim the comb close to the head with one clip of the shears, and one clip for each wattle, and the job is done. The operation should be performed in the evening, after the fowls have gone to roost, as then the few drops of blood drawn will dry up, and the cuts be seared over before morning. Use no hot iron, grease, or wash of any kind, and the fowls will go about their business the next day, as though nothing had happened.

68. A Worm-Ditch.—How can a worm ditch be made?

Dig a trench 4x6 feet, one foot deep, then brick or cement it up. Put in four inches of bedding from the horse stable, then four inches of horse manure. Scatter on top of this some fine corn meal, scraps from the table, yeast and anything that will cause rapid fermentation. Lastly sprinkle about an inch of loose dirt, and over all put a tight roof so as to keep out sun and rain, but open at the sides. Soon the muck flies will take possession and lay their eggs. In a few days the pit will be swarming with maggots, making a rich feast for the chicks.

69. Dying in the Shell.—Why do chicks die in the shell after pipping, and just before time to come out, and why so weak after hatching?

Due to too much moisture and opening the egg drawer frequently. When the moisture is plentiful the admission of dry air causes rapid evaporation and chills the chick in the shell.

70. Crossing Broilers.—In crossing sitting and non-sitting breeds, which would you use for the top cross? Also, what variety would you breed for very early broilers?

The non-sitting variety should be the top cross, mainly for the reason that they are smaller and lighter. We cross Single Combed Brown Leghorn cocks on Barred Plymouth Rocks. If the reverse was done there would be danger of the heavy cock breaking down the wings of the hens. It is the prevailing opinion that a White Wyandotte cock on Light Brahma hens will produce the best broiler chicks; although

White Leghorn on White Wyandotte would probably produce more quickly maturing broilers. Both these crosses would produce prolific laying pullets.

71. To Dilute Carbolic Acid.—What will cut crude carbolic acid so it can be diluted or make it into a powder similar to what is sold at the stores? What is understood by crude petroleum, and where can it be gotten?

Dissolve in warm water, and use the water for slaking lime. Crude petroleum is the unrefined article, and should be obtained at any drug store.

72. Dropping Eggs.—I have two Plymouth Rock pullets large, fine fowls, laying good eggs—every day. They however do not go to nest, but drop the egg from the top perch of their roost. Can you give reason for this?

Birds are fat and overfed. Change the food. Give but little grain, with plenty of grass as a substitute. In other words avoid fat or starchy foods.

73. Age of Chicks.—Is there any method by which the age of chickens can be arrived at?

Not the exact age. An old bird has a rougher comb and legs, with longer spurs, and less lustre of plumage.

74. How to Kill Fowls.—Is there any better way of killing fowls for the table than by cutting off their heads?

Probably not. Cutting off the head insures thorough bleeding for one thing, which cutting across the roof of the mouth does not surely do, and that thorough bleeding is a very important part of the wholesomeness of the meat. If the severed neck is unsightly, the skin can be drawn over the end and tied with a bit of cord, effectively concealing the ragged neck.

75. White Black Spanish.—I have a W. F. Black Spanish hen that will be three years old May 1st. About the first of December this hen began changing color, moulting her black feathers, and growing white ones, until now she is half white. Can you explain it?

All breeds turn lighter with age. We have seen pure "Black" Spanish entirely white, becoming so gradually.

76. S. C. B. Leghorn's Combs.—Please describe the combs of Single combed Brown Leghorns, male and female, as they should be for breeders.

Comb is single; has five points. Comb

of male should be erect, and that of the female falling over to one side.

77. Crossing for Eggs.—What kind of cockerels would you put with pure blood White Leghorns and Plymouth Rock hens to produce the best fowls for eggs?

Think we should put a White Leghorn cock with the White Leghorn hens, and a Brown Leghorn with the Plymouth Rocks. The Leghorns are the greatest layers of the well-known breeds, and can hardly be made greater layers by crossing another breed upon them. The egg yield of the Plymouth Rocks can be increased by crossing them with the Leghorn cocks.

78. Feather Eating.—How can feather eating be stopped?

Catch the first fowl with feathers missing, or rather every fowl with feathers missing, and rub a little kerosene on all the feathers around the bare place. The next time biddy thief tries to indulge in forbidden treats she will get a nauseous dose, and will give up the habit in disgust.

79. Earth Worms.—Are earth worms good for chicks? I dig up the ground in their yard and they eat a good many. Also, is meat-meal good to feed them?

Yes; earth worms are excellent food for chicks; give them all you can. Meat-meal (beef scrap) should be fed sparingly at first, or it will cause scouring. It is a good food—and some meat should be given them.

81. For One Acre.—How many hens can be kept on an acre of ground for house and yards? Can a man make a living from them if he spends all his time and raises all the chickens he can? What kinds are best to keep and how many kinds?

It depends on how kept, but the general estimate is 100 hens for each acre. We think he can. It depends on circumstances.

82. To Fatten Fowls.—How should fowls be kept for fattening?

Fowls, to fatten well, should be confined in a small space in perfect darkness, and kept perfectly quiet. When large numbers are confined in one apartment they are apt to quarrel, and the strong to impose on the weak. It is better, therefore, to have but few in a place. To fatten well, fowls should

be fattened as rapidly as possible. Coarse corn meal scalded or cooked, with skim milk to drink, is the best diet we know of. For the sake of variety, wheat or cracked corn and wheat may be given occasionally. Coarse sand and gravel should be supplied freely; also granulated charcoal or the same pulverized and given in their soft food. For the last few days of the process a little red pepper may be added to sharpen appetite and aid digestion. They should be fed all they will eat, but the food should not be kept constantly before them, or they will become satiated. Fourteen days will suffice to fatten fowls, even if they were very lean when put up. When they are in good condition ten days will suffice.

83. Space for Fowl.—How many square feet to each fowl should be allowed?

The rule is to allow a house 10x10 feet for ten hens, which gives each hen ten square feet. In the winter a greater number of fowls may be together. The space applies to the square feet on the floor of the house only. The yard should be ten times as large as the house.

84. Hamburgs.—I would like to know what kind of Hamburg's lay the most eggs, the Silver Spangle, Golden Spangle, or the Black Hamburg, and is there any kind of Hamburg's than the three I have named?

There is no difference. The Hamburgs are black, white, silver-spangled, golden spangled, silver-penciled, golden-penciled.

85. Frozen Combs.—Are hens with frozen combs as good layers as those not injured?

If the combs heal they are not injured as layers. It is only during the time the comb is sore that that they will not lay.

86. Hens for Sitting.—What hens are best for sitters?

It is an error to choose the largest hen in the flock for sitting. Those of medium size are best for the purpose, as experience shows, and among those of the same size, those which make the greatest spread of feathers. In this respect the pure-blooded Asiatics are deficient, although what they lack in spread is made up in fluffiness, that

is, in depth. Here, as in other points, benefit is derived from a cross.

87. Silo.—How can a cheap silo be made?

A silo is simply a strong, air-tight box, pit or hogshead—in fact, anything that will answer the purpose—and ensilage is green food, such as grass, vegetable tops, growing corn, or any substance that will be relished by poultry. For poultry a strong barrel or hogshead will answer. The green food should not be cut until it is near maturity, or it will be largely composed of water. If cut just before ripening, the elements intended for the formation of seed will be arrested in the stalks, and the ensilage will be more nutritious. Pass the material through a cutter to get it into half-inch lengths. Pack it close and tight in the barrel, and place the head of the barrel on the ensilage. The head should be just small enough to go down *into* the barrel. On the barrel-head place stones, or any kind of weight, so that when the contents of the barrel are compressed and sink, the head of the barrel will sink with it. As the contents go down, add more ensilage until the barrel is full. The heavy pressure will exclude the air, and the contents can be kept in an excellent state of preservation.

88. The word "Barred."—What do we understand by the word "Barred" when used as in Barred Plymouth Rocks?

It means that the plumage is marked with bars of darker color on a light ground.

89. Brittle Egg Shells.—My hens lay eggs with very brittle shells; a slight pressure will break them. Can I feed anything to them to toughen the shells?

Yes. Crushed oyster shells, bone meal, broken mortar, etc.

90. Caponizing Defined.—Will you kindly explain what caponizing is?

Webster defines caponizing as "castrating a fowl," and a capon as "A castrated cock; a cock chicken gelded as soon as he begins to crow, for the purpose of improving his flesh for the table."

91-114. Several Queries.

Why do hens lay soft shelled

eggs? (Too fat).—Would Leghorns crossed with Dorkings make good broilers? (Yes, excellent).—Do young Langshan chicks ever have white when first hatched? (Yes).—At what age should chicks of the large breeds be allowed to roost without danger of crooked breast bone? (When about three months old).—At what age should Light Brahma pullets begin to lay? (About eight months).—Are Minorcas non-sitters? (Yes).—Should pepper be given to fowls? (Sparingly). What makes eggs sometimes look "White-livered?" (It is on account of the feed. Give some fresh meat and clover).—What is "vulture hock?" (Stiff projecting feathers at the hock joint).—Should all eggs from the same breed of fowls be of the same color? (Not necessarily).—How often should in-breeding be practiced? (About once in three or four years).—Will coal ashes take the place of road dust for a bath? (Yes).—Is unslaked lime injurious to fowls if they eat it? (No). (Hoodan).

—Will pullets begin to lay earlier if a cockerel runs with them? (No).—How many fowls is enough to be kept in a building 32x22? (Fifty, in two pens of 25 each).—What will take frost out of frozen combs and wattles? (Glycerine put on three times a week).—At what age should a Wyandotte cockerel begin to crow. (Sometimes they crow when three months old).—Do pure-bred Wyandottes ever throw single combs? (Sometimes, but rarely).—If a rose-comb Leghorn cockerel is mated to single-comb pullet what comb would the offspring have? (Some single, some rose).—Is the odor of fresh paint injurious to fowls? (No).—What is the usual price for incubator-hatched chicks a day old? (Ten cents).—Will hens swallow without injury, large pieces of bone? (Yes, as large as a bean or larger).—How shall I keep sunflower seeds in winter? (Simply in a dry place).—Is Hoodan pronounced *Howdan* or *Hoodan*?

CHAPTER VII.

TURKEYS, DUCKS AND GEESE.

1. Turkeys.—I have a hen turkey blind in one eye. Is there any special disease to be guarded against or was it the result of an accident?

It may be the result of accident, or due to cold from draught of air on that side.

2. Cold in the Head.—My turkeys are all swelled in the head under the eye toward the nose, and they sneeze. Can you tell me what the trouble is, and the cure?

It is probably a cold in the head, caused by exposure to cold storms or draughts. Mix a teaspoonful of lard with half as much of each of pure ginger, mustard and cayenne pepper. When well mixed add flour to stiffen it, so it can be rolled into slugs half as big as your little finger. One slug is a dose for a hen, and two for a turkey.

3. Bowel Difficulty.—My turkeys begin to mope when about two months old, and have a violent attack of the bowels, but not like cholera. Are never attacked until full feathered.

It may be due to lice, cold on the

bowels, or from some kind of food eaten.

4. Hens to a Male.—How many turkey hens ought there be kept to breed from one male?

Twelve.

5. Age for Breeding Purposes.—Is a turkey gobbler four or five years old as good for breeding purposes as one a year old. Did you ever hear of a turkey hen that, while having a lot of young ones, started in laying eggs?

Not as valuable as one younger, but if strong and active you may retain him. It is something unusual to begin laying at that time.

6. Fatty Degeneration.—I had a turkey-hen killed recently. Had its liver almost covered with hard, white spots, about the size of a pea. Everything else was healthy. State what was the matter.

It was due to indigestion, or to fatty degeneration.

7. Trouble from Lice.—What ails our

young turkeys? They are active and hearty, but in a day or so begin to die. They are hatched by hens and good care is given them.

Look on the heads and necks for the large tick louse. Grease heads, necks, and vents, with a few drops of a mixture of one gill of lard and a teaspoon of oil of pennyroyal.

8. Feed for Turkeys.—What should young turks be fed the first week?

A successful turkey-raiser feeds the chicks during the first eight days on eggs boiled hard and minced; during the second week he adds to this bread-crumbs, chopped with parsley and onions; during the third week he keeps back the eggs, and only continues the bread and the vegetables; afterward, instead of the bread, he gives moistened meal, boiled peas, and above all, millet, of which young turkeys are very fond.

9. Broken Egg.—What can be done with a turkey hen that has had a broken egg in her over a month? She appears quiet and well. Gave her castor oil but it did not relieve her.

Keep her on straw, and give her rest. Oil the parts and feed a tablespoon of linseed meal daily.

10. White-Bronze Turkeys.—I put a setting of Bronze turkey eggs under a hen and they are hatching to-day and two of the young turkeys are white or cream colored, which I do not understand.

We cannot say that the two coming white or cream color are mongrels or that their parents were mixed. We have heard that some strains of Bronze turkeys have thrown pure white sports that grow to be as large as the other ones.

11. Turkeys for Farmers.—Can farmers do much at raising turkeys?

No one can succeed better with turkeys than the farmer if he will bestow upon them a fraction of the care he gives his sheep and cattle. Confinement does not suit them, but give them the run of the farm while they do no damage to the growing crops they do them much good by their destruction of insects, more especially grasshoppers, that frequently destroy whole fields of grain. When they

can get these they require but little other food but they should be fed a little grain at night so they will be sure to return home to roost. Fifty or more can be raised on most farms each year without ever missing what it takes to keep them and at Thanksgiving they will bring enough ready cash to buy the winter clothing for an ordinary family, or they will pay a year's taxes on a farm.

12. Best Variety for the Farm.—What breed of turkeys would you advise the farmer to keep?

There are several varieties or breeds of domesticated turkeys, but we would place the Bronze at the head of the list as they are by far the largest and easiest to raise. If the farmer will raise the pure bred of whatever breed he keeps, he can readily sell a part of his flock at an advance over market price. We have no hesitation in saying that gobblers of the improved Mammoth Bronze breed could be made to weigh when full grown 40 to 45 pounds and hens 22 to 25 pounds each.

13. Preparing Turkeys for Market.—Give the correct method of preparing turkeys for market?

In marketing turkeys always have them dressed, and be sure that they have been picked when dry. The feathers should be removed while the bird is bleeding, and the drawing done immediately afterwards. The wings should be cut off and the neck bone where the head has been removed so cut that the skin can be readily drawn over it. The neck is then thoroughly washed from blood and wiped dry, after which the skin is tied and trimmed. The remaining work should be done with neatness and thoroughness. Thoughtfulness and good care should be exercised from the first, that the skin be preserved well. This gives the young birds a finished appearance and they will command the best prices. Boxes should be used for packing, and some believe it profitable to have them made to order. They should hold 150 to 200 pounds each and the birds

should be packed without using paper. Sort them carefully, placing the larger and smaller birds in separate boxes. No mixture of qualities should go in one box. Pack the birds closely when thoroughly cold. They should not shake when the cover is nailed down.

14. Fattening.—What should be fed to fatten turkeys?

In fattening turkeys for market, wheat and barley grain and barley meal are good, but do not use brewer's grain. It has a tendency to make the meat oily.

15. Standard Varieties.—How many varieties does the "Standard" recognize?

Six breeds. The Bronze, White, Black, Buff, Slate and Naragansett.

16. Best as Breeders.—At what age should breeders be selected?

Do not breed from a yearling gobbler if it can be avoided. Hens should be two years old.

17. Weight of Bronzes.—What should Bronze turkeys weigh?

Males at six months of age weigh from 18 to 22 pounds. Females 10 to 14 pounds. Mature males 30 to 40 pounds; females 18 to 22 pounds.

18. White Hollands.—Are these a good variety to breed?

* Yes. They rank in weight next to the Bronze. They are a good market breed.

19. Mating.—When should turkeys be mated?

Not later than the middle of January.

20. Number for Setting.—How many eggs should be placed under a turkey hen?

A good-sized bird will cover 20 eggs.

21. How Often to feed Turks.—How often should young turkeys be fed?

As often as five or six times a day until three months old. After that two meals a day; give cracked corn, wheat, oats, but no whole corn until cold weather.

22. Treatment of Chilled Turkeys.—How may turkeys chilled by rain be warmed?

Put them in warm water all but their heads until warmed, then wrap them up and dry them thoroughly by the fire.

GEESES.

1. Geese as Layers.—Which kind are the most prolific layers? How many eggs will one lay the first year? How many the second? At

what age will they lay the most, and how many will they lay that year?

We do not believe there is much difference in the laying qualities of the several breeds. Twenty eggs are a fair average the first year after maturity; but after that it may reach forty, as age makes but little difference after the second year.

2. For Feathers and Market.—Which are the best for feathers, and how much will one yield in a year? Which are the best for market and what is their "Standard" size?

The best breed for feathers is the Embden, they being entirely white; but the Toulouse yield the heaviest. The quantity ranges from one-half to a pound a year. The best for market is a cross of a Toulouse gander with an Embden goose. Both breeds attain, at times, the weight of from twenty to twenty-five pounds per single bird.

3. Water Necessary.—Is a pond or stream of water a necessity in keeping geese, or will enough water to drink, supplied daily, be sufficient; and how far would it be advisable to let them run to a pond or stream?

Geese do best on a pond or stream, and will wander to great distances. They do not thrive if denied a body of water in which to enjoy themselves.

4. Egg Production.—What is the best food for geese for egg production?

The best food is a variety of grain and green stuff. They are very fond of foraging.

5. Geese to a Gander.—How many geese should be allowed to run with one gander?

Geese pair if sexes are equal, and it is best to have an equal number of both sexes; but four females may be allowed with a gander.

6. Food for Goslings.—What is the best food for young goslings?

At first give boiled oat meal, mixed with chopped onions. After they are a few days old feed anything they will eat.

7. Cost of Raising.—How much does it cost to raise a goose to maturity?

To keep a goose confined, and the food bought, the cost may be anywhere from \$1 to \$3; but if at liberty the cost need not be more than twenty-five cents.

8. Hens as Mothers.—Is it better to hatch their eggs out under a hen, or to let them hatch and raise their own young?

It is best to allow the eggs to be hatched under geese, as they are the natural

mothers. Hens do not always succeed in hatching geese eggs.

9. To tell the Sex.—How can I tell the sex of geese?

The female has a coarse voice, while that of the male is fine. The male is heavier on the neck, and more masculine in appearance.

10. When to Set Geese.—What is the proper time for setting geese?

Geese should always be set as early as possible; the earlier the better. If they are out in May it saves trouble and expense; it also insures success. Both geese and turkeys have often second hatches, which make good table birds, but they are not good for breeders. It may be laid down as a rule—table birds may be hatched at any time, but breeders should be those which are hatched early and have everything in their favor.

11. When to Pick Geese.—How many times a year can geese be picked, and how many will yield a pound of feathers at picking?

Geese can be plucked when the feathers are ripe, that is, when there is no blood in them. This can be told by examination only. If a plucked feather shows blood the feathers are green and must be left awhile longer. The number of times of plucking depend upon the condition and feeding of the flock. If well cared for they can be plucked three, and sometimes four, times a year. A pair of Toulouse geese are credited with yielding a pound of feathers, worth two dollars, in a year.

12. Goslings.—When should they be allowed to go in water?

Not until three weeks old. They are easy prey to minks, muskrats and snakes.

13. The Toulouse.—Is the Toulouse the largest breed?

Yes, largest of all. It sometimes weighs over 30 pounds. Color, dark green on back; light green on belly.

14. The Embden.—Give brief description of the Embden?

Large, nearly as heavy as the Toulouse. Plumage pure white.

15. Possible profits on Toulouse.—What returns should one get from a pair of Toulouse?

Feathers, \$2.00 worth; 30 eggs; 10 goslings, made to weigh 20 pounds apiece at Christmas, is a fair estimate.

DUCKS.

1. About Eggs.—How old are ducks before they begin to lay eggs, with good care? How long is it profitable to keep old ducks, or rather after they are one year old? Can you keep them up to the Standard, by selecting from your earliest birds where you would have perhaps 100 to select from? How many eggs do they lay in a year?

Some begin when six months old. For five years, with care, or longer. Yes. About 150.

2. Young Ducks Eggs.—Do duck eggs hatch as soon as ducks first lay.

It depends on their condition. Sometimes when ducks are very young, their eggs are not perfect.

3. Damp Quarters.—Several of my Pekin ducks suddenly, and without any apparent cause, became lame in the back, were unable to walk or stand; would not eat; after a day or two legs became stiff and cold; lingered several days before dying?

Probably due to damp quarters at night. Ducks should have dry sleeping quarters.

4. Heat, Water, etc.—Which is best for young ducks, top heat, with cold floor, or bottom heat. If the laying stock have access to river will they do better, the eggs be more fertile, and ducklings stronger, than if they are yarded, with only water to drink?

Top heat is better. The ducks will thrive better on the water but it will be more difficult to secure the eggs.

5. Cholera, Roup and Gapes.—Are ducks liable to cholera, roup or gapes?

They are exempt from each.

6. Numerous Queries.—I have twenty-two Pekin ducks. The eggs came from three different places—nine drakes and thirteen ducks. How many drakes will it take for those ducks? Ought they to be kept together? Or should the different kinds be kept separate? How should they be fed to lay early? Do they keep young ducks in brooders the same as they do chickens?

Six drakes to one duck is sufficient. They may be kept together, but drakes should not be related to females. Feed on steamed chopped hay, cooked potatoes, with some animal food, such as ground meat. Young ducks are raised in brooders the same as chicks.

7. White Bills.—Are the Pekin ducks liable to white bills? I bought a sitting of Pekin duck eggs, from a high class poultry dealer last year, but I find in young ducklings, that some of their bills are white, while others are all right. How is this?

The Pekin should have a deep yellow bill. Your birds seem to have a dash of Aylesbury blood in them.

8. Feeding, etc.—Would like information on following questions: How to feed? What to feed? What kind of a house should they have? What time should they commence to lay?

Give cooked potatoes with chopped hay, (scalded) and ground meat, twice a day. Feed all they will eat. A warm house with a dry floor. About February they should lay.

9. Leg Weakness.—One of my ducks is lame. It sits down almost all the time, but when it does get upon its feet it is all right.

The duck is probably weak legged from insufficient muscle-forming food. Rub the legs well up to the body with a good liniment, and feed oatmeal to strengthen the muscles.

10. About Drakes.—By care and proper feed, cannot Pekin ducks be induced to lay earlier than January. In a flock containing several drakes will there be any disagreement among them, or will they live together amicably. How many ducks to each drake?

It depends on when they were hatched. Warmth of quarters has much to do with it. In your climate they should lay very early. They usually agree very well. Five is about the right number.

11. Picking for Market, etc.—How should ducks be picked for market? Can they be made to weigh from eight to ten pounds when they are twelve weeks old? What do they generally bring per pound in the months of September and October?

They should be dry picked. Yes, per pair, not singly. In September young ducks bring about fifteen cents per pound.

12. Pure Blood.—How long may drakes run with ducks before they must be changed to keep blood pure?

About three weeks.

13. Eggs Don't Hatch.—I want to know why my duck eggs did not hatch good. I keep from 102 to 104 in an incubator and give them plenty of moisture?

Perhaps you gave too much moisture. Duck eggs require but little moisture at first. No more at any time than hens' eggs.

14. Weight of Pekins.—What is the average weight of Pekin ducks?

If all the ducks in a flock reach seven pounds each it will be a good one. No weights are specified.

15. Pekins or White Muscovies.—Will you please tell me how I can tell the difference in Pekin Ducks and White Muscovy Ducks?

Pekin is white, with yellow bills and legs. White Muscovy has flesh-colored bills, light yellow legs, very red face, which has caruncles of a reddish color.

16. Turnips for Ducks.—Are turnips good for ducks?

Grow a crop of turnips for ducks, if you intend to raise a large number. On the large establishments, where hundreds of ducks, are raised, a principal food for them is cooked turnips, with a small proportion of ground grain. No crop can be grown to better advantage than turnips, and in no way can turnips be grown so profitably as to feed them to ducks.

17. Pekin Ducks as Layers.—Are Pekin good layers?

The Pekins will often begin to lay when they are six months old, but for next year the layers should be from duckling hatched in April, or the old ducks should be retained. It is better to use old females with young drakes, if fertile eggs are desired early in the season next year. Pekins grow very fast and mature early. When they begin to lay, they produce a large number of eggs before they cease.

18. Food for Ducklings.—What is the best food for young Pekin ducklings when first hatched? When they are very young is it best for them to have water to swim in, or only enough to drink?

Feed the same as to little chicks. Feed nothing for twenty-four hours, then bread crumbs moistened with milk (or water), corn bread soaked in milk (but squeezed nearly dry) is excellent, also corn meal pudding. Keep the feed dishes clean and sweet by removing all uneaten food ten minutes after they have been fed; otherwise it will sour and then—good-bye ducklings. Ducklings require a great deal of green food, and grit should be supplied them. Give them water to drink, only. The most successful duck-raisers never let their ducks swim.

19. Cayugas.—Describe the Cayuga duck?

The weight of Cayuga ducks is from six to eight pounds when in prime condition. Good judges pronounce their flesh savory and sweet and equal to the other large varieties in this respect. The plumage of the drake is rich and glossy when exposed to the sun, bringing out the metallic lustre of green, with a blending of purple, on the back and wings. The head is small and slender; eyes dark hazel; bill black, or dark color; back long and broad; breast full and deep; body long, round and plump; wings long; tail feathers hard and stiff, with the characteristic curl belonging to all of the Mallard species; shanks black or dark, slate black preferred.



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